ABSTRACT

Title of Thesis: THE IMPACT OF DISORDER ON FEAR OF CRIME: A TEST OF THE FIRST LINK OF BROKEN WINDOWS

Joshua Conard Hinkle, Master of Arts

Thesis Directed by: Professor David Weisburd
Department of Criminology and Criminal Justice

The broken windows hypothesis (Wilson and Kelling, 1982) suggests that disorder causes fear of crime to increase in a community, starting a chain of events that eventually leads to an increase in crime in the neighborhood. This thesis aims to improve our knowledge of the relationship between disorder and fear of crime in the context of the broken windows hypothesis using a micro-level research design.

The results of this study suggest that perceptions of disorder have a strong influence on individual's fear of crime, and that perceptions of disorder appear to mediate the affects of changes in observed measures of actual disorder on fear. This suggests that the relationship hypothesized by the broken windows literature may exist, and that police may be able to indirectly reduce fear of crime by reducing disorder. The findings show that this would reduce perceptions of disorder and thereby indirectly reduce fear of crime.

THE IMPACT OF DISORDER ON FEAR OF CRIME: A TEST OF THE FIRST LINK OF BROKEN WINDOWS

by

Joshua C. Hinkle

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the degree of
Master of Arts
2005

Advisory Committee:

Professor David Weisburd, Chair
Professor Gary LaFree
Professor Laura Dugan

ACKNOWLEDGEMENTS

I would like to thank David Weisburd, Gary LaFree and Laura Dugan for being a wonderful thesis advisory committee and giving me invaluable comments and suggestions on improving my work. I would also like to thank Laura Wyckoff and Sue-Ming Yang for their help in preparing the data, suggestions on methodology, proof reading my work and being my support network during times of stress. This thesis could not have been completed without their help and support.

TABLE OF CONTENTS

Chapter I: Introduction and Literature Review

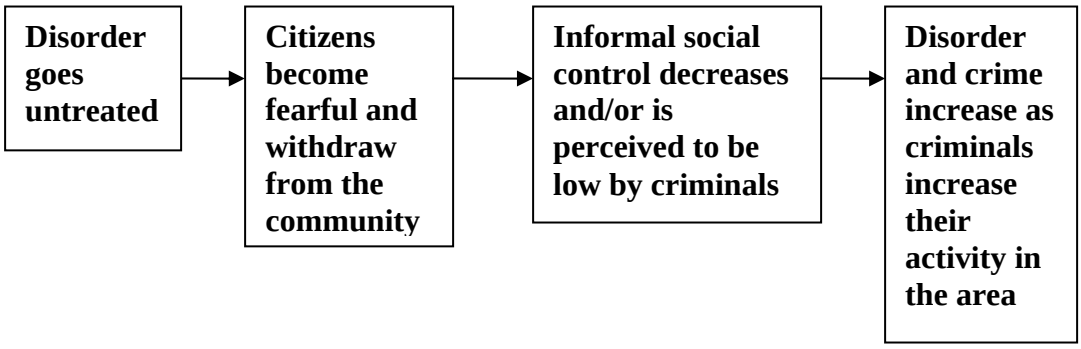
Fear of crime has long been an area of interest for criminologists. Early studies on the topic produced findings showing that the most fearful groups in society were older citizens and females (see Ferraro, 1995 chapters 6 and 7 for a review of literature on these topics).[1] This was surprising as it is common knowledge in the field from findings in the Bureau of Justice Statistics National Crime Surveys and other sources that young males are the group most likely to be crime victims. Further interest in the topic arose when a good deal of subsequent research reinforced the idea that crime rates were not the main variable determining an individual's level of fear and suggested that disorder may have as much, or in some cases, more of an impact on an individual's fear of crime than actual crime rates in their neighborhoods (Wilson, 1975; Hunter, 1978 as cited in Taylor 1999b; Garofalo and Laub, 1978; Garofalo, 1979; Wilson and Kelling, 1982; Lewis and Salem, 1986; Skogan, 1990; Kelling and Coles, 1996; Taylor, 1999b). This literature defines disorder as consisting of various nuisance behaviors and minor crimes like loitering, public drinking, disruptive noise, as well as physical decay in a community indicated by such things as dilapidated, abandoned buildings, vacant lots, graffiti and litter.

Together such findings led to the development of theories suggesting that police could most effectively fight crime by focusing their efforts on disorder. These theories are commonly termed "broken windows theories" after the most famous

[1] However, Ferraro (1995) notes later that the effects of age on fear disappear when controlling for other factors (p. 70-71).

article on the subject (Wilson and Kelling, 1982). The following section will describe these theories in detail. Their basic argument is that disorder in a community leads to fear of crime among residents. In turn, residents withdraw from the community, thus lowering the neighborhood's level of informal social control which is hypothesized to cause disorder and crime in the area to increase in frequency and severity. Wilson and Kelling's (1982) hypothesis is interpreted graphically below in Figure 1.

Figure 1: The Broken Windows Hypothesis



Looking at the broken windows hypothesis (see Figure 1), it is apparent that the link between disorder and fear is the key component. While this is only one of several components of the theory it is clear that, using the logic of this hypothesis, if disorder is not linked to fear citizens will be unlikely to withdraw from the community. Thus informal social controls will not be weakened, and criminals would not be expected to increase their activities in the neighborhood in the framework of

this model. Thus without the link between disorder and fear, the rest of the causal relations may not happen as hypothesized. Of course crime and disorder may still increase without a link between disorder and fear, but without that relationship it cannot happen as the broken windows literature suggests. Interestingly, most studies relating to the broken widows theory have not given much attention to the relationship between disorder and fear, which is surprising given its importance in the model. This paper aims to improve our understanding of this relationship in the context of the broken windows hypothesis.

This research explores the relationship between disorder and fear at the micro level by examining the effect changes in the level of disorder have on fear using measures of disorder gathered at two points in time. For police to be able to reduce crime in the broken windows framework they must be able to reduce the level of disorder in a community, which will, if the theory is valid, reduce fear of crime among residents and lead to an increase in informal social control in the community. For this to happen, disorder and fear must be closely related so that a change in disorder will produce a change in fear. To test this relationship fear measured in the post-intervention period[2] will be regressed on the change in disorder from time one to time two while controlling for street crime, whether or not the area received extra police presence, direct and indirect victimization, fear level on the respondents' street segment at time one, the level of crime and disorder at time one and basic

[2] Fear was measured using a resident interview survey. Unfortunately a panel design was not used in this data collection, thus it is not possible to create a variable representing change in fear at the individual level.

demographic characteristics. This analysis allows for an assessment of the relationship between disorder and fear in the framework of the broken windows hypothesis.

The data used in this analysis offer an advantage over most of the prior research because they allow the relationship between disorder and fear to be examined at the micro place level as researcher observations of disorder at the block level would be compared to the fear levels of resident's living on that specific block. This gives the advantage of testing the effect of immediate spatial disorder on residents' fear of crime. A micro-level analysis also falls in line with recent research suggesting that such an approach is beneficial for studying crime (Weisburd, et al 2004; Eck and Weisburd, 1995; Taylor, 1997; Weisburd, 2002).

In this research, micro-places are defined as specific locations within larger areas such as neighborhoods or communities (Weisburd, et al 2004; Eck and Weisburd, 1995). Some studies have further defined the micro place as block faces or street segments as is done in the current study (Sherman and Weisburd, 1995; Taylor, 1997). This literature suggests the importance of micro-level data in studying crime by showing that crime tends to cluster in small places, offering support for hot spots policing.

The current study expands the study of micro-places by adding the suggestion that residents' perceptions of crime and disorder, and in turn any subsequent fear of crime, is most likely to be influenced by the levels of disorder and crime in the micro-areas surrounding their residences. If this is true, and disorder is found to cause fear,

it would suggest that hot spots policing approaches focusing on disorder at the micro level could be effective in reducing levels of fear in disorder hot spots.

Before explaining the data and methodology used in this analysis in detail, the following section will summarize and critique the literature tying disorder to fear of crime.

Linking Disorder to Fear of Crime

While a link between disorder and fear of crime is interesting on its own merits, it is even more crucial to understand as it is a major component of various "broken windows/decline" theories (Wilson and Kelling, 1982; Skogan, 1990; Kelling and Coles, 1996), which have had a large impact on policing strategies over the past two decades. Wilson and Kelling (1982) argued that simple disorder indicators, like broken windows, can foster crime in a community if left untended. As such, the authors suggest that to reduce crime, police should focus resources on cracking down on disorder and minor crimes before they cause serious crime problems to arise in the neighborhood.

While the broken windows theories best illustrate the importance of the link between disorder and fear of crime, a review of the literature suggests that the interest in fear of crime was not introduced by the broken windows theories, but rather was sparked in large part by numerous studies finding that fear did not appear to be tied to official crime rates or actual victimization risks. This conclusion was best illustrated by studies that found that the groups in society who were the most fearful of crime

were older residents and females (see Ferraro, 1995 chapters 6 and 7 for a review of literature on these topics). This generated interest in the topic as males have consistently been found in the National Crime Surveys conducted by the Bureau of Justice Statistics to be the most victimized group (as well as the most active offenders).

Other studies compared crime rates and levels of fear across neighborhoods and found that the level of fear was not correlated with the neighborhoods' level of crime and that the highest crime areas didn't exhibit the highest levels of fear (Lewis and Salem, 1986). The notion that fear of crime is not tied to crime rates or victimization risks was further supported by the observation that although fear goes up as crime goes up, it doesn't fall as rapidly when crime declines (Taylor and Hale, 1986). These findings naturally led criminologists to question what caused people to be afraid of crime if it is not just their actual risk of being victimized or the level of crime in the neighborhoods in which they live.

Much research on this topic suggested that fear of crime may be more influenced by minor crimes and other public nuisances that many have termed disorder or incivilities. Wilson (1975) suggested that people are not only troubled by crimes but also:

"The daily hassles they are confronted with on the street—street people, panhandlers, rowdy youths, or 'hey honey' hassles—and the deteriorated conditions that surround them—trash strewn alleys and vacant lots, graffiti, and deteriorated or abandoned housing—inspire concern" (p. 66).

Garofalo and Laub (1978) stated that "…what has been measured in research as the 'fear of crime' is not simply fear of crime" (p. 245) and tie fear to quality of life and concern for the community. Garofalo (1979) in a later work further elaborated on this point, finding that "fear of crime is not simply a reflection of the risk or experience of being victimized" (p. 96). Such findings further caused criminologists to attempt to identify the correlates of fear of crime.

Hunter (1978 as cited in Taylor 1999a) formulated a model through which disorder and incivilities affected both crime and fear of crime. Hunter hypothesized that disorder and incivilities produce fear in residents because they feel that the external agencies of control have failed to preserve the order. Thus, as residents perceive that matters are out of the control of local agencies, residents begin to feel personally at risk of victimization. Hunter also suggests that this will increase crime, which in turn will further increase fear. One can view Hunter's work as the groundwork of the broken windows theory (Wilson and Kelling, 1982).

As outlined above, Wilson and Kelling (1982) suggested that untended disorder makes residents fearful as they conclude that social control has broken down in the neighborhood, and they thus withdraw from the community lowering the level of informal social control. This in turn causes more disorder to occur, and may even cause crime to increase as local criminals step up their offending as they also conclude that social control is low and that their chances of being caught are slim. As the cycle worsens, criminals from outside areas may move their activities into the neighborhood as they too may perceive their risk of capture to be low.

In 1990 Skogan presented a more elaborate version of the broken windows hypothesis in Disorder and Decline. He divides disorder into two categories, physical and social. Physical disorder is neighborhood dilapidation and is measured by things like the number of vacant lots, abandoned houses, and amount of graffiti. Social disorder consists of behavioral issues in a community and includes things like unsupervised youth being unruly in the streets, harassing calls aimed at women, loitering, public drinking and various other nuisance behaviors. Skogan says both types of disorder signify a breakdown of the social order and thus lead to social disorganization. This causes concern and fear of crime and he hypothesizes that this fear will drive out "good" citizens for whom stable community life is important, as well as keeping like-minded people from moving into the area. Skogan argues that this will then lead to less informal social control, namely through less supervision of youth, which will then lead to more disorder and even crime. Thus it's a vicious cycle of decline, very similar to the process hypothesized in the broken windows literature. An important difference between Skogan's theory and Wilson and Kelling's (1982) is that Skogan shifts the outcome of interest from crime to neighborhood conditions. His theory argues that disorder can begin a cycle of decline that can drastically lower neighborhood conditions, and crime is simply one of the mechanisms through which this can happen. Thus in Skogan's theory crime is considered more as a causal factor rather than an outcome.

A 2001 study (Markowitz et al, 2001) best summarized the basic relationships between fear, crime and disorder suggested by the literature reviewed above,

concluding that the basic argument is that increases in disorder lead to rising fear in a neighborhood, which reduces social cohesion and may eventually lead to serious crime (p. 297). This basic model is the one that is considered in this study, though the analysis here will only focus on the link between disorder and fear.

Limitations of past research

There are three major limitations to the research literature on the broken windows hypothesis. First, as noted above, the literature introducing the theories pays relatively little attention to the link between disorder and fear, which is surprising given its central role in the theories' causal processes. However, a few more recent studies on fear of crime have examined the relationship between disorder and fear in more rigorous statistical analyses, but most are weakened by further limitations. This leads in to the second major limitation-- most research on the link between disorder and fear was not done in the context of the broken windows theory or in relation to a broken windows policing program. Looking at the issue in the context of broken windows policing allows an analysis of whether the strategies suggested by Wilson and Kelling (1982) have an impact on the mechanisms they suggest lead to crime. Lastly, the third limitation is that most work on this topic has used large geographic areas as units of analysis. This weakens the findings as it is likely that an individual's immediate surroundings have the greatest impact on their level of fear. Some studies dealing with the link between disorder and fear of crime have addressed these limitations, but either fail to deal with all of them or have other drawbacks. These are reviewed and critiqued below.

A study by Covington and Taylor (1991) analyzed fear of crime at the neighborhood and individual level using several variables hypothesized to be relevant predictors of fear. This study also used objective, observed measures of disorder, in addition to the more commonly used survey measures of perceived disorder, arguing that "an *objective* index of a neighborhood's incivilities would permit discriminating impacts of actual signs of disorder from impacts of resident's reactions to cues of disorder, and thus be preferable" (p. 233).

The Covington and Taylor (1991) study found that while objectively measured physical and social disorder were significantly linked to fear, perceived disorder had the strongest unique link to fear. The authors argue that this suggests that fear is more a psychological issue, rather than an ecological or sociological one. The point of interest to the current study is that those seeing/perceiving more disorder than their neighbors are more fearful, which offers support for the first part of the broken windows hypothesis. A drawback to the Covington and Taylor (1991) study is that they examined the issue at the neighborhood level, which weakens the findings as described above.

A similar study involving surveys of residents in Baltimore, MD explored the link between disorder and fear of crime and satisfaction with the community by interviewing residents twice, with two years between the first and second interview (Robinson et al, 2003). They addressed the shortcoming of the Covington and Taylor (1991) study by using a block-level analysis. The data supported their hypothesis, as the residents who reported the most disorder reported lower levels of satisfaction than

those who reported less disorder. Additionally, the study found that those reporting more disorder problems than their neighbors reported feelings of vulnerability which increased faster than their neighbors who reported less disorder problems. In a similar vein, respondents who reported that conditions on their block were worsening also became more fearful in the second interview compared to their neighbors who reported conditions staying the same or improving. All of these findings lend support to the link of the broken windows/decline theoretical chain that argues that disorder causes residents to become dissatisfied and fearful.

Another study tested a variation of the broken windows/decline hypothesis very similar to the model in Figure 1 using a sample of neighborhoods from three waves of the British Crime Survey (Markowitz et al, 2001). Their findings suggested the model was correct. Of particular interest to the current research, they found that "the dominant effect in the cycle is the effect of disorder on fear" (p. 310). The authors thus concluded that their findings are consistent with the broken windows/decline hypothesis as they show that disorder may increase crime indirectly by increasing levels of fear which in turn reduce the level of social cohesion which then leads to crime.

Both the Robinson et al (2003) and Markowitz et al (2001) studies have the same limitation compared to other prior research- they only include measures of perceived disorder. These studies could be strengthened by also including an objective measures of disorder as in the Covington and Taylor (1991) study reviewed above as well as an official measure of crime. Another drawback to the Markowitz et

al (2001) study was that it used a neighborhood-level design, which is still a relatively large unit of analysis.

A recent study (Taylor, 1999b and 2001) used a block analysis similar to the one used in the current study and found mixed results. While some of the relationships suggested by the broken windows literature were present, there were many confounding and limiting factors. Not as many outcomes were affected by disorder as the broken windows/decline theories suggest, the indicators used to measure disorder had a large impact on the outcome, and disorder did not have a particularly strong impact when compared with initial community structure or crime rates. This led Taylor to conclude that "…researchers and policy makers alike need to break away from broken windows per se and widen the models upon which they rely, both to predict and preserve safe stable neighborhoods with assured and committed residents" (p. 22).

The major drawback to Taylor's (1999b and 2001) study is that he looked at the issue over a long period of time, comparing data collected in 1981 to data collected in 1994. As such, the analysis did not directly involve a police crackdown. The current study compares data collected before the start of a police crackdown with data collected several months later after the crackdown had ended in both the target areas that received the interventions and the catchment areas which did not. In other words, the issue is examined in a different context than in Taylor's study. This design allows for an assessment of the effect of decreases in observed disorder on fear to be tested in relation to a *forced* change in disorder rather than a natural change over

a 13-year period which is more relevant to the policing-oriented broken windows model.

Chapter II: Research Question

The review of the literature on the broken windows/decline hypothesis shows that the suggested link between disorder and fear is a key component of the theory. If this link is not present the theory falls apart as the rest of the causal chain of events is unlikely to occur as hypothesized without it. The current study examines the link between disorder and individual fear of crime at the micro-level in an effort to better understand the relationship between these variables in the context of the broken windows theory. Additionally, the data used were collected during a focused police intervention, which gives the added benefit of being able to examine the relationship between disorder and fear during a police crackdown. The main research issue to be addressed in this paper is:

- Do decreases in observed immediate spatial disorder cause reductions in fear of crime?

If this relationship is present in the data, the first link of the broken window's theory's chain of events will be upheld. If it is not present, the data does not support the theory's hypothesis. However, other factors could be influencing this, and additional analyses will be ran if changes in observed disorder is not found to be causally related to fear of crime.

Firstly, a possible explanation for a lack of significance between disorder and fear is that perhaps residents do not accurately perceive the level of disorder on their blocks. To test this hypothesis, perceived disorder will be regressed on observed

disorder and a series of control variables. If it is found that observed disorder is not related to fear of crime, then it will be concluded that residents are not aware of disorder on their block and thus immediate spatial disorder is unlikely to be a powerful predictor of fear of crime. Secondly, if observed disorder is found to cause perceived disorder, it will then be hypothesized, based on Covington and Taylor's (1991) finding that perceived disorder was the strongest predictor of fear of crime, that perceived disorder may be mediating the relationship between observed disorder and fear. This would be tested by regressing fear on both observed and perceived disorder with the same set of control variables as in the original analysis.

Chapter III. Data and Variables

To address the research interest outlined above, a variety of data collected in Jersey City, New Jersey are analyzed. The data were collected to study the issue of displacement of crime and diffusion of crime control benefits resulting from a police intervention (Weisburd, et al 2005). Several types of data were collected for this project, including: pre- and post-intervention resident interview surveys, police calls for service, arrest and incident data, and researcher observations of physical and social disorder. These data sources will be described in more detail below.

Data sources

The displacement and diffusion study (Weisburd et al, 2005) is an evaluation of two police crackdowns in Jersey City, one focusing on prostitution and the other on violent crime/drugs.[3] Two small target areas that exhibited a large volume of the respective crimes were selected to receive the police crackdowns. For each of these sites two neighboring catchment areas were selected to test for displacement and diffusion of benefits. The study aimed to determine whether the crackdowns displaced crime or diffused crime control benefits to non-targeted areas nearby. To perform this analysis, the data sets listed above were collected. The bulk of the data were collected at the street-segment level. A street segment was defined as a block face, including both sides of a street, from one intersection to the next. To conduct accurate physical and social observations on longer segments the researchers decided

[3] At the outset of the study a third site was selected to be the focus of a police crackdown on burglary. However, due to implementation problems this site was dropped from the study.

to make the street segments a standard length, ranging from .02 to .09 miles. Fifty-eight segments that exceeded the length were split into two segments, while three that were too short were combined. The break down of the street segments by site and area is shown in Table 1 below.

Table 1: Number of Street Segments

Research Site	Number of Street Segments
Violent Crime/Drug Site	
Target Area	12
Catchment Area 1	34
Catchment Area 2	35
Site Total	81
Prostitution Site	
Target Area	21
Catchment Area 1	21
Catchment Area 2	46
Site Total	88
Overall Total	
Total	169

Due to small Ns in the target areas, and the fact that the catchment areas were by design much larger than the target areas to improve the chances of capturing any displacement or diffusion effects, the analysis in this paper simply combines all areas and compares the 169 total street segments before and after the police intervention to see if any changes in disorder were causally related to the level of fear of crime reported in the post-intervention resident interview surveys. A limitation of this is that it does not allow for a direct assessment of the impact of the police intervention

on disorder or fear and that the areas of the study sites received differential levels of police presence. However, in regards to the latter, it could be argued that there is always differential police presence across neighborhoods and in this case we are more aware of the specifics. This allows for the creation of a dummy variable to control for the extra police presence by coding each street segment as either being in a target area which received extra attention or a catchment area which received only normal levels of police presence.

Resident Interview Surveys

A total of 1,409 interviews were conducted by telephone in the Center for Crime Prevention Studies at Rutgers University during the displacement and diffusion study, 958 in the violent crime/drug site and 451 in the prostitution site. During the pre-intervention period 676 interviews were conducted, with 733 being conducted in the post-intervention period. Interviews were conducted in both the target and catchment areas of both sites. Examining the breakdown by area, 133 were conducted in one of the two target areas[4], with the remaining 1,276 being conducted in one of the four catchment areas.

A computerized telephone directory was used to identify numbers in the target and catchment areas. This allowed the researchers to identify exact addresses and enabled them to attempt to over-sample groups that would otherwise be under-represented in a non-stratified sample of Jersey City. Eligible participants were defined as the first person over 18 in each household who was willing to participate.

[4] The target areas were much smaller, and much more sparsely populated than the catchment areas.

The research design called for 10 households to be sampled from each street segment. However, this was not always possible and the number of interviews per street segment varies slightly. Interviews were conducted pre- and post-intervention and a response rate of 72% was obtained. The interviewees were asked a variety of questions pertaining to crime and disorder on their block as well as questions related to their level of fear and neighborhood satisfaction. Demographic information on the respondents, including age, race and gender was also collected. The complete survey is provided in Appendix A.

Social Observations

A team of trained[5] research assistants collected social observations of crime, disorder and external conditions (weather, traffic, time, etc.) for the displacement and diffusion study. This generated a database containing a wealth of data on the social atmosphere of the neighborhood at the time of the police intervention. The observations were conducted at the street segment level. A total of 3,063 observations were performed in the violent crime/drug site and 3,066 observations in the prostitution site. The observations were recorded in nine waves in each site and were randomly assigned by segment and time during each wave. Each observation lasted for one hour, and the observer would sit at the center of the street segment they were observing and record every disorder that occurred on the coding sheet which is

[5] Observers were given a codebook and explained how to code various disorder activities. After the lesson and having time to study the codebook they were tested using hypothetical situations that they had to code. They were also instructed only to code items that happened on their street segment, and it was made certain that they knew the boundary of the segments they were observing each shift. The observers were also told not to code any activity ambiguous enough to require guess work.

provided in Appendix B. The violent crime/drug site received one wave of observations pre-intervention, six waves during the intervention, and two waves post-intervention. The prostitution site received one pre-intervention wave of observations, seven waves during the crackdown, and one wave post-intervention. Only the pre- and post-intervention[6] waves are used in the current study. Observations were recorded in both the target and catchment areas of both sites. Table 2 lists the items that the observers were trained to look for and code.

Table 2: Social Observation Items[7]

Social Disorders	Criminal Activities	External Conditions
Verbal disorder	Physical assault	Date and time
Loud dispute	Drug activity	Automobile traffic
Panhandling	• Soliciting	Pedestrians
Drinking alcohol	• Transactions	Quality of lighting
Person down	• Drug use	Temperature
Loud music or noise	Prostitution	Weather conditions
Gambling	• Loitering	Reactivity[8]
Unattended dogs	• Soliciting	Police patrols
	• Pick-ups	
	Burglary or theft	
	Vandalism	

[6] As mentioned, two post-intervention waves of social observations were recorded in the violent crime/drug site. Only the first, immediate post-intervention wave is used in the current study.
[7] Table 2 is taken from Weisburd, et al (2005).
[8] Reactivity was a measure of whether citizens noticed the observer and interacted with them.

Physical Observations

In addition to the social observations, another team of research assistants were trained to collect a series of observations on the physical conditions of neighborhoods. These observations included many items commonly termed physical disorder (Skogan, 1990). A total of 507 physical observations were conducted during the course of the study: 243 observations in the violent crime/drug site and 264 observations in the prostitution site. Again, the data was collected at the street segment level. Three observers coded each segment independently. If their codings of the segment didn't match, they then walked the segment again as a team, discussing areas where they disagreed to ensure that each segment was coded properly. The physical observations were collected in three waves, a pre-intervention wave, a wave during the height of the intervention, and a post-intervention wave. Only the pre- and post-intervention waves are used in the current study. Table 3 lists the items that were collected by the research team. The instrument used by researchers to record the physical observations is provided in Appendix C.

Table 3: Physical Observation Items[9]

Street Layout	Housing Conditions	Disorder & Decline
Number of lanes	Residential or commercial	Abandoned vehicles
One way or two ways	Type of housing or commerce	Used condoms
Quality of lighting	Broken windows	Drug paraphernalia
No trespassing signs	Burned or boarded buildings	Broken glass
Public telephones	Structural damage	Graffiti
Bars or liquor stores	Security gates or windows	Litter or garbage
Bus stations		Vacant lots
Automobile traffic		Grass or shrubbery
Parks or benches		

Official Police Data

The Planning and Research Bureau of the Jersey City Police Department provided five years (1996 – 2000) of calls for service data, crime incident data, and arrest data for the displacement and diffusion study. Only call for service data are utilized in this analysis as it includes the most data and offers a proxy of citizen perception of crime which can be argued to have the strongest impact on resident's fear of crime. Calls for service includes more cases because many crimes do not make it into incident or arrest data as the officer responding to a call for service may simply mediate the situation and thus not generate a crime incident report or arrest. However, there are also drawbacks to call for service data, namely that the crime may not have actually occurred, or the person reporting the crime may have reported it

[9] Table 3 is taken from Weisburd, et al (forthcoming).

incorrectly (i.e. calling a burglary a robbery). In this analysis having a proxy for citizen perception of crime that can also offer an indication of the level of crime on each street segment is appropriate, thus call for service data is preferable even given this drawback. Calls from six months prior to each wave of resident interviews would be used in this analysis.

Variables in the analysis

To refresh, the main hypothesis to be tested in this study states that the level of observed disorder on a street segment is likely to influence levels of fear of crime among people residing on that block. Individuals living on a street segment with a high level of disorder would thus be hypothesized to be more fearful than residents living on a street segment with a lower level of disorder. This will be examined using the data sets outlined above, but before going further it is necessary to identify the variables that are included in the model and a description of how they were created.

The main unit of analysis in this study is the individual citizens who were included in the post-intervention resident interview survey (n=733). However, some of the independent variables (observed disorder, crime, pre-intervention fear and extra police presence) are measured at the street segment level. The reasoning behind this is that the level of crime and disorder on a person's block are hypothesized in this analysis to likely be the most relevant variables determining their level of fear. This is because residents are more likely to be aware of things happening in their immediate surroundings, rather than in larger geographic areas like neighborhoods. Additionally the questions on the resident interview survey specifically asked

respondents about crime, disorder, etc. on their block, making the use of street segment level crime and disorder data for independent variables even more appropriate

Dependent Variable

The dependent variable is a four-level scale to measure fear of crime created from responses to a variation of the Bureau of Justice Statistics' National Crime Survey (NCS) fear question. The question in the resident interview survey asked respondents how safe they felt walking alone outside at night on their block. Response options were "very unsafe, somewhat unsafe, somewhat safe, and very safe." When creating the fear variable, this question was rescaled so that "very unsafe" was the high point and "very safe" the low point to make interpreting the results more intuitive.

This question has recently come under attack, with critics arguing that it is a poor measure of fear of crime. Some (Ferraro, 1995 and Farrall and Gadd, unpublished manuscript) argued that this question tapped more into perceptions of risk, than fear of crime. He suggests that fear of crime measures should tap into the emotional response to crime. This isn't an issue for the current study as fear of crime is defined here as an individual's perception of victimization risk. This is appropriate because the broken windows' literature implies that fear of crime is related to individuals' concerns about becoming victims of crime in their neighborhood.

Additionally, more recent work has suggested that the use of such questions has led to an overstating of the level of fear of crime (Farrall, 2004; Farrall and Gadd,

2004; and Farrall and Gadd, Unpublished Manuscript). Farrall and Gadd (unpublished manuscript) offer a list of problems with the standard NCS fear question and variants including:

- It fails to mention crime at all;
- It refers to imprecise geographical areas (i.e. “the neighborhood”)
- It asks about an activity (walking alone at night) that people rarely or never do
- It mixes the real (‘do you’) with the imagined (‘would you’);
- It fails to refer to a specific period of time.
- Starting a survey question with the word “how” is generally believed to be leading

These are very pressing concerns, but unfortunately they cannot be addressed in the current research as the survey used in the displacement and diffusion study was drafted before these types of issues had been brought to light. The only exceptions are the first two criticisms above dealing with the NCS fear question not referring specifically to crime and asking about imprecise geographical areas. The fear question used in the displacement and diffusion study asked respondents how safe they felt walking alone on their “block” at night, rather than asking how safe respondents felt when walking alone in their "neighborhood" at night as in the NCS instrument. This is a much smaller geographical unit and people are much more likely to a have a clear definition of what area constitutes their “block.” In regards to not referring specifically to crime, it can be argued that it was clear that the question is referring to crime as the question was asked as part of a lengthy survey about crime in the respondents’ community. Thus it is implied that the question is asking if the person feels unsafe walking alone at night on their block due to fear of being

victimized by crime. Additionally, using this standard fear of crime question allows the results of this study to be readily compared to past research on fear of crime, much of which used the same question or a slight variation of it.

Independent Variables

Several independent variables are included in the model. These include variables the broken windows/decline literature suggests are tied to fear of crime as well as demographic control variables. The following section details how each variable was created.

Disorder and Crime Variables

Change in observed social disorder is measured at the street segment level and was created by aggregating disorder items[10] in the social observations database during the pre- and post-intervention waves. All of these variables were simply counts of the number of times each social disorder occurred. These variables were then averaged by the number of observations during the corresponding wave to eliminate the issue of different numbers of observations for each street segment. Finally, the social disorder average for the pre-intervention wave was subtracted from the post-intervention average to create a variable representing change in social disorder at the street segment level.

[10] The social disorder items included in the scale measured: the number of people loitering, the number of verbal disorders, the number of loud disputes, the number of people noticeably drunk, the number of people drinking in public, the number of homeless people, and the number of loud noises.

Change in physical disorder was created in a similar manner by summing items[11] in the physical observation database during the pre-and post intervention waves and then subtracting to create a change variable. In this case the variables were all dummy variables indicating whether or not each physical disorder item was present on each segment during the current wave of physical observations.[12] With the physical observation data there was no need to average the variables before summing them to form the scale as each street segment received only one physical observation pre- and post-intervention.

Baseline measures of observed social and physical disorder were also created by using the pre-intervention wave observations to create variables to control for the level of disorder on each street segment prior to the intervention. However, the baseline measure for social disorder was highly correlated with change in social disorder and created multi-collinearity issues in the regression models (i.e. tolerance=.057 and VIF=17.5 in the first model). Consequently it was removed from the models as it was also not significantly related to fear (p-value greater than .9 in all analyses) and did not alter the findings.

---

[11] The physical disorder items included in the scale measured: burned, boarded up or abandoned buildings, buildings with broken windows, vacant lots, buildings with structural damage, buildings with graffiti, broken glass on streets or sidewalks, litter,

[12] The original coding of physical observations varied from item to item. For this analysis they were recoded into dummy variables which represented the specific physical disorder item being rated as either "moderate or heavy"on the street segment or being present on 30% or more of the block/buildings on the block depending on which measurement scale was originally used. The only exception was broken windows, where the dummy variable represented the presence of one or more broken windows on the street segment.

A crime variable was created from police calls for service data to be used as a control variable in the analyses.[13] The calls for service data were aggregated to the street segment level for six months prior to both the pre- and post-intervention waves of the resident interview surveys. The pre-intervention count was then subtracted from the post-intervention count to create a variable representing change in crime at the street segment level. As with disorder, a baseline control variable for crime was included and was created by tallying all crime calls for service on each street segment in the six months immediately preceding the start of the intervention.

One issue that arose is that some calls get coded to an intersection rather than a street address which makes it difficult to code the call to a particular street segment. This was handled by dividing the number of calls at each intersection by the number of street segments coming together at that location. For example, if there were 20 crimes coded at an intersection, and four street segments came together at that location, each segment would have five crimes added to its total. In the case that the intersection was on the border of the study site, and one or more of the segments was not in the study site, these outside segments would be included in the division of calls at the intersection and their share of the crimes would simply be excluded from the analysis. For instance, if one of the four segments was outside the study site in the above example each of the three segments in the site would have five crimes added to

[13] The crime variable includes all calls for service for the following call codes: assault no weapon, assault weapon, homicide, hostage/barricade, kidnapping, robbery commercial, robbery financial, robbery person, robbery residence, sexual assault adult, sexual assault minor, theft from person, domestic dispute, burglary of other structure, burglary of public property, burglary of residential property, motor vehicle theft, theft of other property, theft of property from vehicle, shots fired heard, firearm person with, prostitution, use or sale of drugs, and weapon person with.

their total. The five calls that would have gone on the fourth segment would simply be excluded from the analysis.

Extra Police Presence and Time One Fear

Continuing on, a dummy variable was created to control for extra police presence. This variable identifies segments located in the two target areas which received focused police crackdowns. It is also important to control for fear at the pre-intervention period, as this could have an impact on fear after the intervention. Unfortunately a panel design was not used for the resident interviews, so it's not possible to directly control for each individual respondent's fear. Thus pre-intervention fear levels were aggregated and averaged at the street segment level, and these averages will be applied as controls for individuals in the final analysis by assigning each person their street segment's average fear level at time one.

Victimization Variables

Direct and indirect victimization are also included as controls in the model. Direct victimization is a dummy variable representing whether the survey respondent reported their home being broken into or being personally attacked during the post intervention resident interview survey. Indirect victimization is a dummy variable created from a question in the survey asking if the respondent knew anyone that had been victimized by crime in their neighborhood.

Demographic Control Variables

Personal demographic control variables representing the individual's age, race and gender were also created from responses to the resident interviews. Race consists

of dummy variables for blacks/African Americans, Hispanics and other races (includes Asians and all other races given in the interviews, which accounted for a small portion of the sample). In the original data set, race was captured in one variable, while ethnicity (being Hispanic or not) was captured in a second. For the purpose of this analysis, anyone reporting being Hispanic was coded as such, regardless of their race.[14] There were some cases with no response to the ethnicity question, and a response of "other" to the race category. These people were asked to specify what they consider their race to be, and when a specification was given it was generally a country of origin or simply reporting "Hispanic" as their race. Those specifying Hispanic or a Hispanic country of origin[15] were recoded as being Hispanic on the race variable. Age is simply a continuous measure of the age of the respondent at the time they were interviewed. Finally, the last demographic variable, gender is simply a dummy variable representing females as past research reviewed above showed women to be more fearful.

Finally, a series of variables were created to control for social situations in the respondents' lives which may affect their fear levels. One dummy variable represents whether or not the respondent has kids, a second represents whether they own or rent their home, a third is a count of the number of people supported by the household's

[14] Of those reporting to be Hispanic, 6.4% reported being white, 1.8% black or African American, 0.5% American Indian or Alaskan Native, 0.5% Asian, 2.7% Native Hawaiian or Pacific Islander, 88.1% Other race. As described above, a lot of the "other" responses consisted of "Hispanic" or a Hispanic nation, and were thus recoded to Hispanic on the race variable.
[15] The most common responses were Dominican, Hispanic and Puerto Rican.

income, and, lastly, a fourth variable controls for the number of years the respondent has lived at their current address.

Table 4 below lists the descriptive statistics for all the variables discussed above.

Table 4: Descriptive Statistics for Variables

Variable	Min	Max	Mean	Standard Deviation
Fear of Crime (time two)	1.00	4.00	2.660	.852
Change in Social Disorder	-16.67	19.75	-3.483	4.673
Change in Physical Disorder	-5.00	4.00	0.087	1.479
Change in Crime	-30.50	24.50	-3.195	9.546
*Direct Victimization**	0.00	1.00	0.093	0.291
*Indirect Victimization**	0.00	1.00	0.080	0.272
Time One Fear	1.00	4.00	2.537	0.466
Time One Physical Disorder	0.00	7.00	2.579	1.569
Time One Crime	0.00	141.67	23.220	20.994
*Extra Police Presence**	0.00	1.00	0.126	.332
*Black**	0.00	1.00	0.343	.475
*Hispanic**	0.00	1.00	0.305	.461
*Other Race**	0.00	1.00	0.210	.407
*Female**	0.00	1.00	0.610	.488
Age	18.00	91.00	42.734	17.405
*Has Children**	0.00	1.00	0.380	.485
*Owns Home**	0.00	1.00	0.260	.441
Years at Current Address	0.00	70.00	10.550	12.237
Number of Dependents	1.00	10.00	2.650	1.533

*****Dummy variables, for which the mean represents the proportion of "non-zero" cases. i.e. for "Black" 34% of individuals in the data are black or African-American

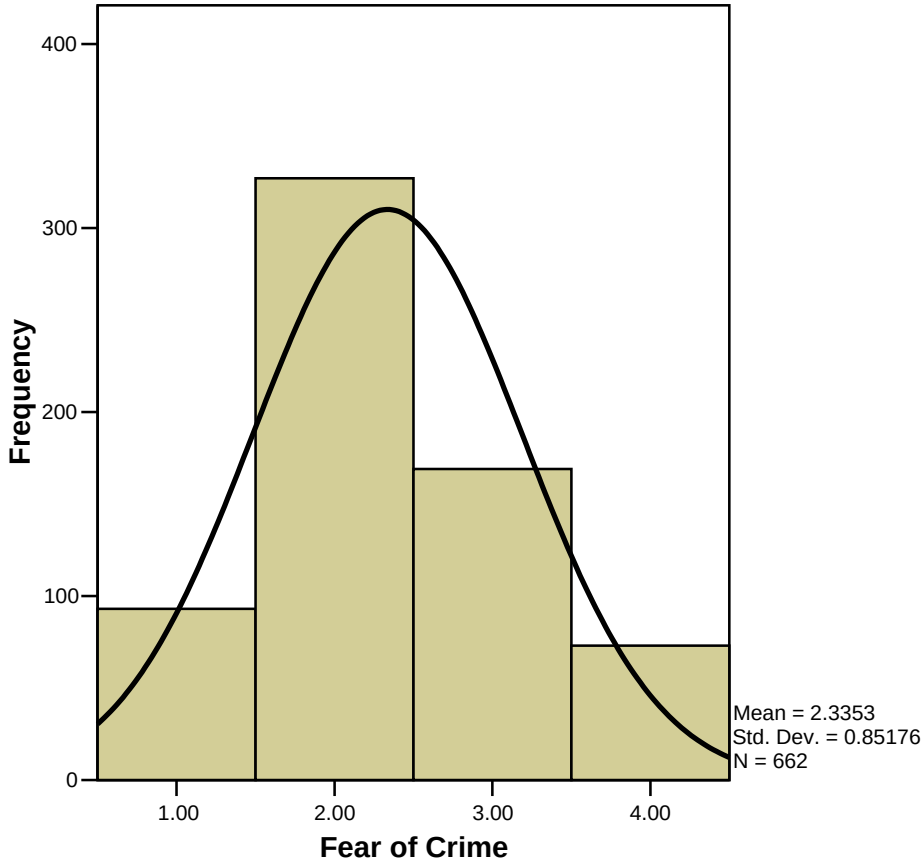
The descriptive statistics in Table 4 show the direction of the change variables, which is important when interpreting the findings of this study. Looking at this table, we see that there was a mean decrease in observed social disorder and crime, while there was a mean increase in physical disorder. Of the items in the physical disorder

database, condoms/condom wrappers and drug paraphernalia in the street showed the biggest decreases as these were items closely related to the main targeted crimes of the police interventions. These items were not included in the physical disorder variable because it is argued that they are not theoretically relevant as they are more indicators of crime than disorder.[16]

Figure 2 below illustrates the distribution of fear of crime, the main dependent variable of interest to this study.

[16] However, all models were run with change in condoms/condom wrappers and drug paraphernalia (as well as baseline controls for both). It was found that none of these variables were significant and adding them did not change the findings.

Figure 2: Distribution of Fear of Crime



1=Very Safe 2=Somewhat Safe 3=Somewhat Unsafe 4=Very Unsafe

Chapter IV. Statistical Methodology

The main research question examined in this study tests the relationship between observed disorder and fear of crime in the context of a focused police intervention by using change in disorder and crime as the main independent variables. This relationship was tested using ordinal regression, as fear of crime is measured as a four-level ordinal variable as outlined above. Fear of crime during the post intervention resident interview surveys is regressed on change in observed social disorder, change in observed physical disorder, change in crime, direct victimization, indirect victimization, pre-intervention fear level, pre-intervention physical disorder, pre-intervention crime, extra police presence, race, gender, age, having children, owning a home, years at current residence, and the number of people supported by the interviewee's household's income. The regression equation to be estimated is as follows.

$$Fear = B_0 + B_1\ \Delta observed\_social\_disorder + B_2\ \Delta observed\_physical\_disorder + B_3 \Delta\ crime + B_4\ direct\_victimization + B_5\ indirect\_victimization + B_6\ pre\text{-}intervention\_fear + B_7\ pre\text{-}intervention\_physical\_disorder + B_8\ pre\text{-}intervention\_crime + B_9\ extra\_police\_presence + B_{10}\ black + B_{11}\ Hispanic + B_{12}\ other\_race + B_{13}\ female + B_{14}\ age + B_{15}\ children + B_{16}\ homeowner + B_{17}\ years\_at\_residence + B_{18}\ dependents\_supported$$

The N in this analysis is 465 which is lower than the total number of post-intervention surveys (N=733) due to missing values. Firstly, there were missing values in the dependent variable due to non-response on the fear question. Deleting cases with no data for the dependent variable dropped the N from 733 to 662.

Secondly, this number decreased further due to missing data on independent variables.

This is to be expected given that several databases were used, each with their own missing value problems. As detailed above, social observations were randomly assigned by segment and time and as a result, just by chance, some street segments did not receive social observations during the pre- and/or post-intervention periods. Thus all interviews for that segment would be excluded due to missing data in the change in social disorder variable. In other words, some variables had missing data simply as a result of the randomization process and in reality are not "missing values" in the traditional sense. However, some data was missing in the usual fashion. As with any survey data, non-response was an issue. This is particularly true in the resident interview survey used in this study (see Appendix A) as "I don't know" was a response option to most questions (Bishop, 1987 and Ayidiya and McClendon, 1990). Also, questions regarding race and ethnicity are sometimes sensitive issues and illicit refusals to answer from respondents.

A missing value analysis was performed to explore the degree to which the missing values damage the reliability of the conclusions reached in this study. If the values were missed in certain patterns, for example if females were less likely to report victimization experiences and their fear of crime, then our conclusion of what leads to fear of crime excluding those cases that had missing values in gender might yield biased results. It is found from the missing value analysis that the data were missing by chance and there were no clear patterns to missing values. Furthermore,

comparing the means of independent variables with whole sample and with missing value cases excluded, it was found that the means changed little regardless of which sample was used and thus the missing data should not affect the results of the current study. Thus it was decided to simply exclude the cases with missing values from the analysis. The output from this missing value analysis along with further discussion is provided in Appendix D.

Chapter V. Results

Tables 5a and 5b show the results from estimating the above ordinal regression equation. Table 5a shows the thresholds of the dependent variable (difference of each category from the omitted category, which is "very unsafe" in this case). Table 5b shows the coefficients, Wald statistic, significance level, VIF and tolerance for each independent variable. The VIF and tolerance for each independent variable were obtained by estimating the model in an OLS regression.

Table 5a: Results from Ordinal Regression on Fear of Crime- Dependent Thresholds

N=465
Chi Square= 85.710 Sig.= 000. Nagelkerke Psuedo R Square= .184

Dependent Variable Threshold	Estimate	Wald	Sig.
Fear=1	-.762	.977	.323
Fear=2	1.880	5.907	.015**
Fear=3	3.557	20.329	.000***

Table 5b: Results from Ordinal Regression on Fear of Crime- Coefficients

Independent Variables	Estimate	Wald	Sig.	Tolerance	VIF
Change in Social Disorder	-.011	.325	.569	.916	1.091
Change in Physical Disorder	.164	4.045	.044*	.553	1.807
Change in Crime	-.005	.302	.583	.777	1.288
Direct Victimization	.588	3.421	.064	.954	1.048
Indirect Victimization	.535	2.213	.137	.918	1.090
Pre-intervention Fear	.075	.108	.742	.796	1.256
Pre-intervention Physical Disorder	.297	11.149	.001**	.457	2.188
Pre-intervention Crime	-.003	.312	.576	.695	1.440
Extra Police Presence	.922	7.495	.006**	.802	1.247
Black	-1.612	23.676	.000***	.336	2.978
Hispanic	-.216	.421	.517	.316	3.169
Other Race	-.584	2.796	.094	.386	2.589
Female	.368	3.684	.055	.898	1.114
Age	.009	2.008	.156	.739	1.354
Children	-.060	.081	.775	.722	1.385
Home Owner	-.648	7.787	.005**	.741	1.349
Years at residence	.005	.276	.599	.628	1.593
Persons Supported	.133	3.841	.050*	.735	1.361

* sig. at .05 ** sig. at .01 *** sig. at .001

Estimating the above equation using ordinal regression found no significant relationship between change in observed social disorder and fear of crime (p=.569). However, changes in observed physical disorder (as well as the level of physical disorder during the pre-intervention period)[17] were found to be significantly related to fear of crime (p.=.044).

[17] Recall that the baseline measure for social disorder was excluded as it was not significant and was causing multi-collinearity issues.

Interestingly, residents in the target areas which received extra police attention were more likely to report being fearful. This suggests that perhaps when residents see more police in their neighborhood they interpret it as a sign that crime has gotten worse and in turn become more fearful.[18]

Other significant findings in the model included blacks/African Americans and home owners being more likely to report feeling safe, while household's supporting more dependents reported higher levels of fear. Direct victimization and being female were both approaching significance at the .05 level (p=.064 and p=.055 respectively) with both females and those who had been victimized being more fearful.

Are residents aware of changes in social disorder?

While the analysis above found that changes in observed social disorder were not significantly related to fear of crime it is impossible to entirely rule out a relationship between the two based on this analysis alone. The broken windows hypothesis does imply that residents *see* disorder and then become fearful and withdraw from the community. This could be an explanation for why changes in physical disorder were found to be significantly related to fear, while changes in social disorder were not. Physical disorder is more stable (i.e. vacant lots do not disappear overnight) while social disorder events come and go with the people perpetuating them. As such, one possible explanation for the lack of a significant

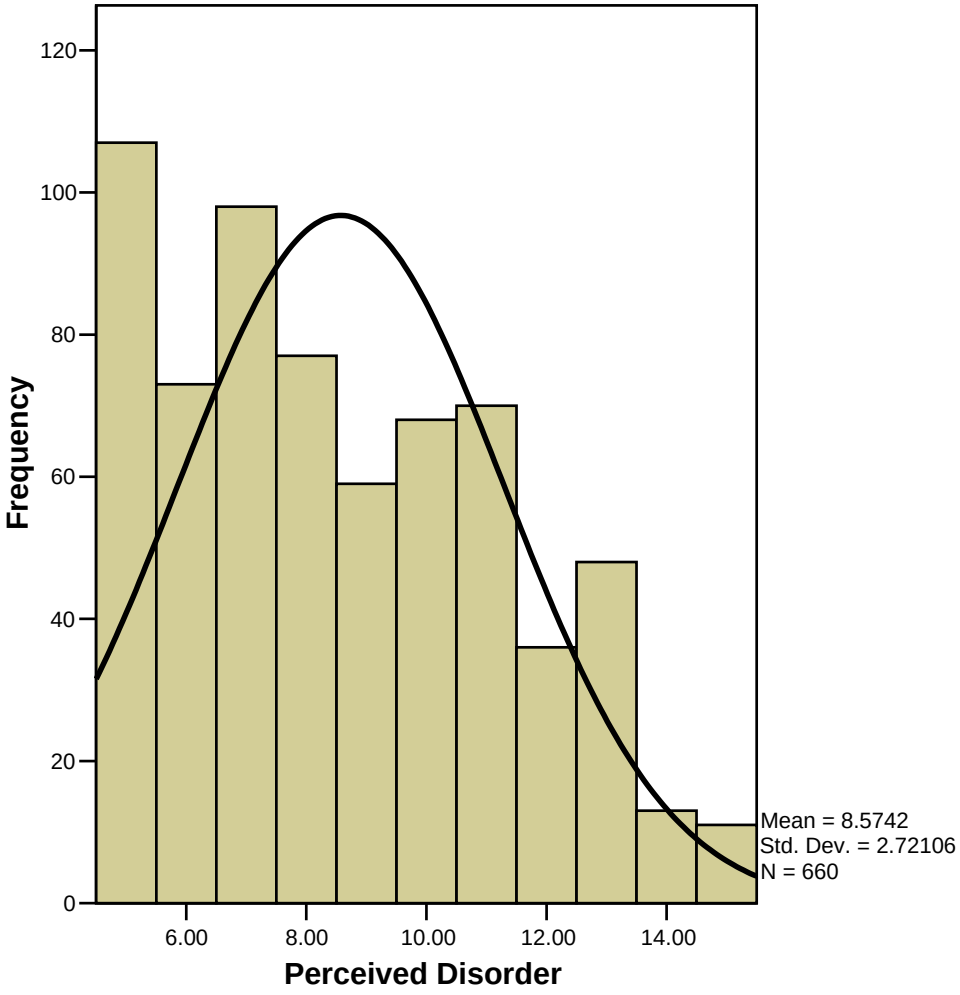
[18] This issue is being explored further in a separate analysis.

relationship between changes in social disorder and fear is that residents are perhaps unaware of the changes in social disorder on their block. They live on the block; however, they are not actively sitting outside and watching for disorder behaviors like the team of researchers performing the social and physical observations were.

To explore this possibility, a measure of perceived social disorder was created from five questions in the resident interview survey asking the respondent to rate how often five types of social disorder occurred on their block.[19] All five items were three-level ordinal measures with responses of "1- Not at all, 2- Sometimes, 3- Often." The five variables were summed, creating a scale ranging from 5-15. This range was too wide for an ordinal regression, thus an OLS regression was used to test the relationship between observed disorder and perceived social disorder. OLS should be adequate for the purpose of testing the existence of a relationship on a ten-level ordinal scale, as past work has suggested that OLS is fairly robust (Long, 1997; Osgood and Rowe, 1994). Figure 3 provides a histogram for perceived disorder. It is not normally distributed, but again with a large N (461 in this case) OLS should be robust enough to handle this.

[19] The five items included in this scale asked how often each of the following types of disorder occurred on their block: youths hanging out and being disorderly; public drinking; panhandling; people damaging property; and gambling in the street.

Figure 3: Distribution of Perceived Disorder



In this analysis only post-intervention measures are used for perceived social disorder, observed social and physical disorder and crime. It wasn't logical to use the change in crime and disorder again as it was not possible to create a change in perceived disorder variable at the individual level since a panel design was not utilized in the resident interviews. Additionally, it could be argued that residents likely perceive disorder and crime levels at the present moment more so than change

in these levels over time, which provides further reasoning for using the post-intervention counts rather than the change variables. Table 6 provides the descriptive statistics for these post-intervention measures.

Table 6: Descriptive Statistics for Post-intervention Disorder and Crime

Variable	Min	Max	Mean	Standard Deviation
Perceived Social Disorder	5.00	15.00	8.574	2.721
Social Disorder	0.00	21.00	1.983	1.817
Physical Disorder	0.00	7.00	2.667	1.417
Crime	0.00	133.00	20.025	19.636

The control variables remain the same as in the original analysis above. This analysis tests whether disorder observed near the time of the post-intervention resident interviews is significantly related to the levels of social disorder perceived at that time. The regression equation to be estimated is shown below.

$$Perceived\_social\_disorder = B_0 + B_1\ observed\_social\_disorder + B_2\ observed\_physical\_disorder + B_3\ crime + B_4\ direct\_victimization + B_5\ indirect\_victimization + B_6\ pre\text{-}intervention\_fear + B_7\ extra\_police\_presence + B_8\ black + B_9\ Hispanic + B_{10}\ other\_race + B_{11}\ female + B_{12}\ age + B_{13}\ children + B_{14}\ homeowner + B_{15}\ years\_at\_residence + B_{16}\ years\_at\_residence$$

The results are shown below in Table 7.

Table 7: Results from OLS Regression on Perceived Social Disorder

N=461
(F=6.718, Sig.=.000. R Square= .195, Adj. R Square=.166)

Variable	Estimate	T-stat	Sig.	Tolerance	VIF
Constant	10.548	11.126	.000***	---	---
Observed Social Disorder	.156	1.986	.048*	.865	1.156
Observed Physical Disorder	.148	1.504	.133	.765	1.307
Crime	.005	.819	.413	.827	1.209
Direct Victimization	1.319	3.287	.001**	.968	1.033
Indirect Victimization	1.997	4.208	.000***	.914	1.094
Pre-intervention Fear	-.166	-.588	.557	.867	1.153
Extra Police Presence	.427	1.074	.283	.893	1.120
Black	-.431	-1.051	.294	.344	2.907
Hispanic	-.695	-1.628	.104	.320	3.129
Other Race	-.884	-1.963	.050*	.399	2.506
Female	-.127	-.518	.604	.907	1.103
Age	-.052	-6.609	.000***	.721	1.387
Children	.597	2.214	.027*	.723	1.383
Home Owner	-.708	-2.377	.018*	.736	1.360
Years at Residence	.027	2.340	.020*	.611	1.637
Persons Supported	-.116	-1.323	.186	.733	1.364

* sig. at .05 ** sig. at .01 *** sig. at .001

Interestingly, the results in Table 7 show that observed social disorder was significantly related to levels of perceived social disorder. Residents living on blocks where more social disorder was observed were more likely to report seeing more social disorder on their block. This suggests that it is unlikely that observed social disorder was not found to be significantly related to fear above because residents were entirely unaware of the level of social disorder on their blocks. The analysis also showed that direct and indirect victimization, having children, and living longer

at their current address increased perceptions of disorder, while racial minorities other than blacks and Hispanics, older residents and home owners reported lower levels of perceived social disorder. In this analysis extra police presence was not found to be related to perceptions of disorder. This suggests that increasing police patrols may not directly impact the levels of disorder perceived by residents.

Relationship between perceived social disorder and fear

Finding that observed social disorder is significantly related to perceived social disorder brings to light another possible explanation for why observed social disorder was not related to fear of crime in the original analysis. Perhaps perceived social disorder is related to fear of crime and that relationship is mediating the effects of observed social disorder on fear. To test the most basic aspect of this hypothesis, perceived disorder is added to the original model estimated above to test its relationship with fear of crime.

$$Fear = B_0 + B_1\Delta\ observed\_social\_disorder + B_2\Delta\ observed\_physical\_disorder + B_3\ perceived\_social\_disorder + B_4\ \Delta crime + B_5\ direct\_victimization + B_6\ indirect\_victimization + B_7\ pre\text{-}intervention\_fear + B_8\ pre\text{-}intervention\_physical\_disorder + B_9\ pre\text{-}intervention\_crimer + B_{10}\ extra\_police\_presence + B_{11}\ black + B_{12}\ Hispanic + B_{13}\ other\_race + B_{14}\ female + B_{15}\ age + B_{16}\ children + B_{17}\ homeowner + B_{18}\ years\_at\_residence + B_{19}\ persons\_suported$$

The results of this ordinal regression are shown below in Tables 8a, 8b and 8c.

Table 8a- Results from Ordinal Regression on Fear of Crime (with perceived social disorder included)- Dependent Variable Thresholds

N=438
Chi Square= 91.348 Sig.= 000. Nagelkerke R Square= .207

Dependent Variable Thresholds	Estimate	Wald	Sig.
Fear=1	.384	.178	.673
Fear=2	3.136	11.545	.001**
Fear=3	4.868	26.740	.000***

Table 8b: VIF and Tolerance for Independent Variables[20]

Independent Variables	Tolerance	VIF
Change in Social Disorder	.912	1.096
Change in Physical Disorder	.542	1.845
Perceived Social Disorder	.810	1.235
Change in Crime	.765	1.307
Direct Victimization	.922	1.085
Indirect Victimization	.876	1.141
Pre-intervention Fear	.768	1.302
Pre-intervention Physical Disorder	.431	2.319
Pre-intervention Crime	.695	1.439
Extra Police Presence	.795	1.258
Black	.335	2.982
Hispanic	.317	3.158
Other Race	.402	2.485
Female	.894	1.119
Age	.681	1.468
Has Children	.712	1.404
Owns Home	.728	1.374
Years at Residence	.617	1.622
# of Persons Supported	.733	1.365

[20] VIF and tolerance were obtained by estimating the model in an OLS Regression.

Table 8c: Results from Ordinal Regression on Fear of Crime (with perceived social disorder included)- Coefficients

Independent Variables	Estimate	y* Standardized Coefficient	Wald	Sig.
Change in Social Disorder	-.009	-.011	.190	.663
Change in Physical Disorder	.131	.154	2.318	.128
Perceived Social Disorder	.134	.157	12.090	.001**
Change in Crime	-.003	-.004	.084	.772
Direct Victimization	.468	.549	2.065	.151
Indirect Victimization	.244	.286	.419	.517
Pre-intervention Fear	-.012	-.014	.002	.960
Pre-intervention Physical Disorder	.239	.281	6.332	.012*
Pre-intervention Crime	-.001	-.001	.027	.869
Extra Police Presence	.921	1.081	7.277	.007**
Black	-1.509	-1.771	19.454	.000***
Hispanic	-.098	-.115	.082	.774
Other Race	-.543	-.637	2.225	.136
Female	.431	.506	4.686	.030*
Age	.015	.018	5.509	.019*
Has Children	-.152	-.178	.489	.484
Owns Home	-.527	-.618	4.720	.030*
Years at residence	.005	.006	.288	.591
# of Persons Supported	.145	.170	4.229	.040*

* sig. at .05 ** sig. at .01 *** sig. at .001

The results in Table 8c show that perceived social disorder is significantly linked to fear, with residents perceiving more social disorder being more likely to report higher levels of fear. Also, adding perceived social disorder to the model removed the significant relationship between changes in observed physical disorder and fear. This suggests that perceived social disorder mediates the relationship between both social and physical disorder and fear of crime and is in line with past

studies that found that perceived disorder was the strongest unique factor linked to fear of crime (Covington and Taylor, 1991). This lends some credence to the broken windows hypothesis, as Wilson and Kelling (1982) argue that residents see disorder go untended in their neighborhood, become fearful and then withdraw from the community.

It is important to note that perceptions of physical disorder are not included in the model as there were no questions relating to physical disorder on the resident interview survey. Thus it is possible that perceptions of physical disorder could also influence fear of crime. However, as physical disorder is more stable than social disorder, it could be argued that perceptions of physical disorder would vary little among residents of a particular street segment. Unfortunately this issue cannot be examined with the current data.

As was found in the original analysis (see Table 5b) extra police presence was again found to increase the likelihood of fear of crime. Other significant findings include: physical disorder at time 1, being female, being older and supporting more dependents increasing fear, while being black and owning a home were found to decrease fear.

Magnitude of relationship between perceived social disorder and fear

Given the finding that perceived social disorder appears to likely be the mechanism linking actual disorder to fear of crime it is important to also examine the magnitude of this relationship. The y* standardized coefficients are also provided in Table 8c and allow for some interpretation of the relationships in the model (Long,

1997). The y* standardized coefficient represents the standard deviation change in the dependent variable given a one unit change in the corresponding independent variable. Examining the y * standardized coefficient for perceived social disorder shows that a one unit increase in perceived social disorder results in a increase of .157 standard deviations in reported fear.

Recall that perceived social disorder was measured as a 10-level ordinal scale ranging from 5 to 15 (which was the full min-max range actually found in the data). As such, a resident reporting a maximum perceived social disorder score of 15 will have a fear score that is 1.57 standard deviations higher than one reporting the minimum perceived disorder score of 5 controlling for everything else in the model (as 15 represents a 10-unit increase from 5). In the same vein, someone reporting a mid-range perceived social disorder score of 10 would have a fear level .825 standard deviations higher than someone with the minimum perceived social disorder score of 5. This suggests that perceived social disorder can potentially have a fairly strong impact on fear in this model, as the maximum change of 1.57 standard deviations can make a lot of difference when applied to a 4-point scale with a standard deviation of .852 as this corresponds to a change of 1.34 in the fear scale controlling for the other variables in the model.

Chapter VI. Discussion

In this paper I set out to examine the relationship between street-level disorder and fear of crime in the context of the broken windows hypothesis (Wilson and Kelling, 1982). Wilson and Kelling argued that when disorder is left untended, residents become fearful as they feel that social control has broken down in the neighborhood. They then withdraw from the community, lowering social control further, and fostering more disorder and eventually crime. For the chain of events in this model to occur as suggested, it is necessary for the first link between disorder and fear of crime to be present.

The initial analysis found that changes in observed social disorder were not significantly related to fear of crime, however, it was found that changes in observed physical disorder were significantly related to fear of crime. This offers mixed support for the broken windows theory's assertion that disorder causes fear of crime. However, it is possible that other factors were behind this lack of significance for change in social disorder. Namely, the fact that residents may not be aware of the changes in social disorder on their block was considered as a possible explanation for the lack of significance between changes in observed social disorder and fear.

To test this, a second analysis was conducted and found that observed social disorder was significantly and positively related to residents' perceptions of social disorder on their block. Considering this finding, it was then hypothesized that perceptions of disorder may be causally related to fear of crime, and thus may be mediating the effects of observed social disorder on fear. To explore this hypothesis,

a final analysis was run adding perceived social disorder to the original model. It was found that perceived social disorder was causally related to fear of crime, while change in observed social disorder was again not found to be related to fear. Also, adding perceived social disorder to the model removed the significance from the relationship between changes in physical disorder and fear. This provides support for the hypothesis that perceived social disorder mediates the relationship between observed disorder and fear. The y* standardized coefficient showed that a one unit increase in the perceived social disorder scale corresponded with a .157 standard deviation change in fear. As detailed above, this showed that maximum increase in the perceived social disorder scale (an increase of 10) would correspond with a increase of 1.34 in the four-level fear scale.

Thus, the y* standard coefficient suggests that perceived social disorder has a large impact on fear in this model. This finding offers some support for the first part the broken window's theory (Wilson and Kelling, 1982) which suggests that disorder causes fear of crime. However, this cannot be viewed as a validation of broken windows, as this is simply a test of one link of the hypothesis's chain of events. It is only possible to test the relationship between disorder and fear with the current data. It is not possible to test if fear in turn causes residents to withdraw from the community thus lowering informal social controls. Nor is it possible to test whether lower informal social controls lead to more disorder and crime. Before discussing the findings in more detail, it is first necessary to outline the limitations of the current study.

Chapter VII. Limitations

There are a few limitations to the data that need to be considered. First, the issue of missing data discussed above must be taken into account when considering the results. As detailed above the initial sample size was the 733 post-intervention resident interview surveys, which was then reduced to 662 after eliminating cases that had no data for the dependent variable. Missing values in the independent variables, in part an artifact of the randomization of social observations, further reduced the sample size in the final analysis to 438.

A missing value analysis (MVA) showed that there appeared to be no patterns to the missing data, and that missing values did not have a large effect on the variables' means. As such the analyses were run with the cases with missing values excluded. The findings of the missing value analysis (see Appendix D) offer confidence in the findings of this study, but still the issue should be kept in mind when considering the findings. The power of the analyses was reduced due to the missing values as only 59.8 % of cases were retained. Even though the findings of the MVA lend confidence to the results, it is possible that some variables did not reach significance level because of this loss of power. Large sample size along with careful design is needed in future research in order to validate the findings from the current study.

Second, as mentioned above, the small number of street segments in the target areas, as well as the larger number of segments in the catchment areas, prevents any analyses directly assessing the effects of the police intervention on disorder and fear.

There are not enough street segments in the target areas to allow for them to be analyzed separately with any confidence in the results. Thus it is not possible to test the target and catchment areas separately, and compare the models testing for any statistically significant differences between them. As such all of the street segments were combined and compared in a single pre- to post-intervention analysis.

This creates a situation in which some areas of the site received more police presence than others. However, police presence always varies across neighborhoods, and in this case the data show to a large degree which areas received extra police attention. Thus it was possible to create a dummy variable to control for the areas that received more patrols as outlined above. Future research should be designed to allow for a comparison of all variables of interest before and after broken-windows based interventions while also allowing for a comparison of areas that received broken-windows based police interventions and those that did not. As such, having large enough target areas to allow for analysis will be required for these studies to effectively look at the impact of these interventions.

The final limitation is the possibility of omitted variable bias. This is a limitation common to studies employing secondary data analysis because the data were originally collected to answer a specific research interest that is often completely different from the topic in subsequent research. As such, the data often lack variables that would be desirable to optimally study the subsequent research topic. For example, in this case there are no reliable measures of socio-economic

status,[21] single-parent homes and other demographic variables that may be tied to levels of fear. Consequently, the findings of this study could be biased. However, this study does include related variables like number of people supported by the household's income, home ownership and having kids, all of which can be argued to serve as proxies for the omitted demographic variables and thus increase confidence in the findings. Future research should address this issue by capturing a wide variety of socio-economic status variables, as well as other items that might be hypothesized to influence fear of crime.

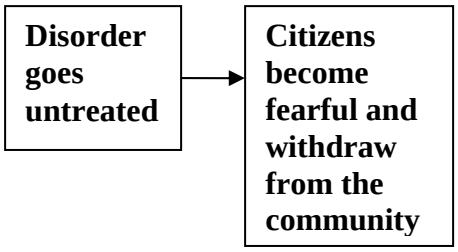
[21] There was a question in the resident interview survey (see Appendix A) asking respondents to give their total family income range for the prior year. However, 33.7% of the data was coded as missing, "refused to answer," or "I don't know" making the variable unusable.

Chapter VIII. Implications

When reading these findings, the most important question to consider is: "what do these findings mean for broken windows theories?" To date most research dealing directly with broken windows (rather than the studies just looking at disorder and fear reviewed above) have simply evaluated broken windows oriented policing strategies and concluded they were successful because they saw a reduction in crime (Kelling and Sousa, 2001). However, others have disagreed with them, saying that most major cities saw a reduction in crime over time, not just areas that implemented broken windows/zero tolerance policing strategies (Herbert, 2001). Others suggested that there's not a direct link between disorder and fear (Sampson and Raudenbush, 1999), which implies that it's not efficient for police to focus resources on disorder to reduce crime.

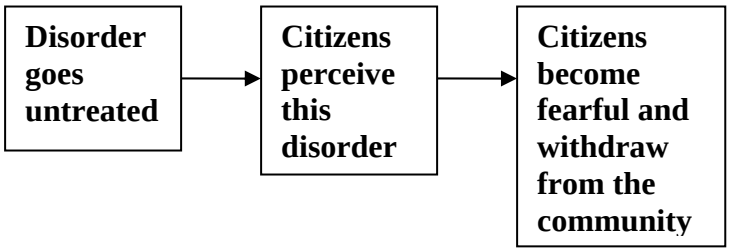
When considering what the implications of the findings for broken windows, it is important to recall that the results of this study only tested and found support for the first portion of the broken windows hypothesis dealing with the link between disorder and fear. The latter portion of the hypothesis is not tested here, and should be explored in future research. With that in mind, the finding in the current study that perceived disorder is causally related to fear, and appears to be the dominant effect in the model, suggests that the relationship between disorder and fear hypothesized by Wilson and Kelling (1982) may exist. However, it also shows that the interpretation of broken windows depicted at the beginning of this study is overly simplistic. The relevant part of the figure is reproduced in Figure 4 below.

Figure 4: The Link between Disorder and Fear in the Broken Windows Hypothesis



The original analysis showed that observed social disorder was not significantly related to fear of crime (see Table 5b) while increases in observed physical disorder was found to increase fear. Further analyses found that observed disorder did influence residents' perceptions of disorder (see Table 7), and that these perceptions were related to fear of crime (see Table 8c). In the final model, perceived social disorder was found to be significantly related to fear, while observed measures of social and physical disorder were not significantly linked to fear. As such, it is thus necessary to add resident's actually perceiving disorder to the model as it appears that this perception of disorder is a crucial link in the causal chain of events. This results in the model illustrated in Figure 5 below.

Figure 5: The Link between Disorder and Fear in the Broken Windows Hypothesis Take Two



Implications for policing

Additional, the findings of this study are interesting from a policing standpoint. First, they suggest that police may be able to indirectly reduce fear of crime by reducing disorder. It is unlikely that extra police presence will directly reduce perceptions of disorder, as the extra police presence variable was not found to be significantly related to levels of perceived disorder in this study (see Table 7). However, as it was found that observed social and physical disorder were significantly related to resident's perceptions of disorder, police interventions that reduce levels of disorder in a community may indirectly lead residents to perceive less disorder and in turn feel safer. The micro-level design of the study also suggests that police may be most effective in fighting disorder and fear by focusing resources on small hot spots of crime and disorder.

There is a caveat to this finding, however. It was also found that living in an area that received extra police presence was related to higher levels of fear. A possible explanation for this is that perhaps when residents see more police in their

community they conclude that crime has increased and in turn become more fearful. As such, any reductions in fear caused by a police crackdown on disorder could be at least partially offset by the extra police presence itself increasing fear. A separate study is being conducted to better determine the impact of focused, hot spots policing on resident's in the targeted areas.

Conclusion

In sum, the findings of this study suggest that perceptions of disorder may strongly influence individual's fear of crime, which offers some support for the first link of the broken window's hypothesis. They also underscore the importance of looking directly at perceptions of disorder in future studies, as in the final model perceived disorder was significantly related to fear of crime, while changes in observed social and physical disorder were not significantly related to fear. To optimally reduce fear of crime future research should focus on further identifying what factors excluded from the model presented in Table 7 may influence residents perceptions of disorder. For example, one possible candidate would be media coverage of crime and disorder in the community, as resident's could be hypothesized as likely to be more fearful if the media is constantly presenting them with stories on crime in their neighborhood. Identifying the causal factors of perceptions of disorder, will allow them to be targeted, and lowering perceptions of disorder will lower fear of crime, according to the findings in the current study. As it stands, the results of this study suggest that police may be able to reduce fear indirectly, by reducing social and

physical disorder as the findings here suggest that this will in turn reduce perceived disorder.

In regards to furthering our knowledge of the validity of the broken windows hypothesis, future studies should be designed in the following manner. Areas should be selected that have moderate to high levels of disorder, but have never received any broken windows policing initiatives (or at least not any recently). Broken windows policing strategies should then be randomly assigned to areas in these sites, with others remaining as controls. Resident interviews should be conducted before and after the intervention, and a panel design should be utilized. The survey should be designed to capture residents perceptions of disorder and crime on their block, their perceptions of the level of police presence, a multitude of personal/social demographic variables beyond the ones in the current study, and a series of fear questions conforming to the suggestions in the literature critiquing the fear question used in the current study (Farrall, 2004, Farrall and Gadd, 2004, and Farrall and Gadd, unpublished manuscript). Lastly a wealth of information should be collected on the communities themselves, measuring things like the social status level of the area to collective efficacy, as well as traditional official police measures of crime and disorder.

This would allow researchers to test the full range of the broken windows hypothesis in the context of the type of policing intervention recommended by the theory, while at the same time allowing for an analysis of the factors that cause resident's to perceive disorder and to become fearful. Better identifying factors that

influence individual fear levels and perceptions of disorder, will offer policy makers more targets in their efforts to make their citizenry feel safer. Finally, such a research design will also allow for a better analysis of the effect police presence has on fear levels in the areas chosen to be targeted hot spots.

This will allow for a powerful test of the broken windows theory, and whether the policing strategies suggested by it are an effective and efficient way to reduce fear and fight crime. Most importantly, such a study would finally shed some light on the validity of a hypothesis which has been strongly influencing policing over the past two decades.

Appendix A

JERSEY CITY DISPLACEMENT PROJECT
HOUSEHOLD SURVEY

1a. Hello, my name is INTERVIEWER'S FULL NAME. I'm a student calling from a research center at Rutgers University. We're interviewing residents in Jersey City about crime and disorder on their block. Your participation in this survey would be greatly appreciated. It should only take about ten minutes. Your answers will be kept strictly confidential and used only for research purposes with no names attached. I would like to speak to a member of this household who is at least 18 years old.

INTERVIEWER: IF NO HOUSEHOLD MEMBER 18 OR OLDER IS AVAILABLE, ASK WHEN TO CALL BACK.

CONTINUE WITH SURVEY .....(GO TO Q.1b) 1

HUNG UP DURING INTRODUCTION

CALLBACK .....

PROBLEMS--LANGUAGE.....

REFUSED .....

*** * * * GO TO END * * * ***

1b. Do you live on ***STREET 1 between STREET 2 and STREET 3***?

YES .....(GO TO Q.2) 1

NO 0

DON'T KNOW.....8

REFUSED 9

1c. I just want to confirm that I dialed correctly. Is this (READ TELEPHONE NUMBER)?

YES .....(GO TO END) 1

NO .....(REDIAL NUMBER) 0

DON'T KNOW.....8

REFUSED 9

*** * * * GO TO END * * * ***

2. Most of the following questions are about the block you live on. When I talk about your block, I mean ***STREET 1 from STREET 2 to STREET 3. We want you to include both sides of STREET 1.***

In general, how would you rate your block as a place to live?

Excellent,.....1

Good,.....2

Fair, or 3

Poor? 4

DON'T KNOW 8

REFUSED 9

3. How safe do you feel when walking alone at night on your block?

Very safe, ...1

Somewhat safe, ...2

Somewhat unsafe, or 3

Very unsafe?.....4

DON'T KNOW.....8

REFUSED.....9

4. Now, I'm going to ask you some questions about specific crimes that may be occurring on your block.

How often do you think apartments and houses on your block get broken into?

A few times a year,.....1

About once a month, ...2

About once a week, ...3

A few times a week, ...4

Every day, or 5

Not at all? .....(GO TO Q.13) 6

DON'T KNOW.....(GO TO Q.13) 8

REFUSED.....(GO TO Q.13) 9

5. When do you think these break-ins usually take place?

Mostly in the morning from 6 a.m. to noon, 1

Mostly in the afternoon from noon to 6 p.m., or 2

Mostly at night after 6 p.m.? 3

OTHER (SPECIFY).....4
.....

DON'T KNOW.....8

REFUSED.....9

6. Where do you think these break-ins usually take place?

Mostly in apartment buildings,.....1

Mostly in smaller single- and multi-family houses, 2

Both in apartment buildings and houses, or 3

Some other place? (SPECIFY).....4

_____

DON'T KNOW.....8

REFUSED.....9

7. Who do you think breaks into homes on your block?

PROBE: By home, we mean both houses and apartments.

Mostly people who live on your block,...1

Mostly people who live in your neighborhood, 2

Mostly people who live in other parts of Jersey City, or 3

Mostly people who are not from Jersey City? 4

OTHER (SPECIFY).....5
.....

DON'T KNOW.....8

REFUSED.....9

8. In the last four months, has anyone broken into, or tried to break into, your home to steal something?

YES 1

NO.....(GO TO Q.12) 0

DON'T KNOW.....(GO TO Q.12) 8

REFUSED.....(GO TO Q.12) 9

8b. How many times has this happened?

NUMBER OF TIMES.....|___|___|

9. When was the last time this happened?

Less than one week ago,.....1

Between one week and one month ago, ..2

Between one month and six months ago, or 3

More than six months ago? 4

DON'T KNOW.....8

REFUSED.....9

10. How did this person break into your home?

_____

_____

_____

11. What did this person take from your home?

_____

_____

_____

12. In the last four months, do you know anyone else on your block who has had a break-in or an attempted break-in at their home?

YES 1

NO.....0

DON'T KNOW.....8

REFUSED.....9

13. Now, I'm going to ask you some questions about one more type of crime that may occur on your block.

How often do you see people fighting on your block? That is, pushing, coming to blows, or threatening one another with weapons.

A few times a year,.....1

About once a month, ...2

About once a week, ...3

A few times a week, ...4

Every day, or 5

Not at all? .....(GO TO Q.17) 6

DON'T KNOW .....(GO TO Q.17) 8

REFUSED .....(GO TO Q.17) 9

14. When do fights usually take place?

Mostly in the morning from 6 a.m. to noon, 1

Mostly in the afternoon from noon to 6 p.m., or. 2

Mostly at night after 6 p.m.? 3

OTHER (SPECIFY).....4
.....

DON'T KNOW.....8

REFUSED 9

15. Who do you think is involved in fights on your block?

PROBE: In general, do you think these people are mostly from your block, your neighborhood, other parts of Jersey City, or ***not*** from Jersey City at all?

Mostly people who live on your block,...1

Mostly people who live in your neighborhood, 2

Mostly people who live in other parts of Jersey City, or 3

Mostly people who are not from Jersey City? 4

OTHER (SPECIFY).....5
.....

DON'T KNOW.....8

REFUSED.....9

16. In the last month, about how many times have you witnessed a fight on your block?

NUMBER OF TIMES.....|___|___|

DON'T KNOW.....98

REFUSED.....99

17. In the last month, about how many times have you been attacked or threatened on your block?

NUMBER OF TIMES.....|___|___|

NONE.....(GO TO Q.20) 00

DON'T KNOW.....98

REFUSED.....99

18. Were you attacked or threatened by . . .

A stranger,.....1

A family member, or.....2

Someone you know who is not a family member? 3

OTHER (SPECIFY).....4

.....

DON'T KNOW.....8

REFUSED 9

19. Please describe what happened the last time you were attacked or threatened.

_____

_____

_____

20. Now I'm going to ask you about something else that may be occurring on your block. How often do you see prostitutes on your block?

A few times a year,.....1

About once a month, ...2

About once a week, ...3

A few times a week, ...4

Every day, or 5

Not at all? .....(GO TO Q.32) 6

DON'T KNOW .....(GO TO Q.32) 8

REFUSED .....(GO TO Q.32) 9

21. Do prostitutes work on your block in the morning between 6 a.m. and noon?

YES 1

NO .....(GO TO Q.24) 0

DON'T KNOW .....(GO TO Q.24) 8

REFUSED .....(GO TO Q.24) 9

22. About how many prostitutes work on your block in the morning?

NUMBER OF PROSTITUTES .....|___|___|

DON'T KNOW.....98

REFUSED.....99

23. Where do they spend most of their time in the morning?

PROBE: Where do they hang out?

Mostly outside on the sidewalk and street, 1

Mostly inside apartments and houses,.....2

Both outside and inside, or.....3

Someplace else? (SPECIFY).....4

.....

DON'T KNOW.....8

REFUSED.....9

24. Do prostitutes work on your block in the afternoon between noon and 6 p.m.?

YES 1

NO.....(GO TO Q.27) 0

DON'T KNOW.....(GO TO Q.27) 8

REFUSED.....(GO TO Q.27) 9

25. About how many prostitutes work on your block in the afternoon?

NUMBER OF PROSTITUTES .....|___|___|

DON'T KNOW.....98

REFUSED.....99

26. Where do they spend most of their time in the afternoon?

PROBE: Where do they hang out?

Mostly outside on the sidewalk and street, 1

Mostly inside apartments and houses,.....2

Both outside and inside, or.....3

Someplace else? (SPECIFY).....4

.....

DON'T KNOW.....8

REFUSED.....9

27. Do prostitutes work on your block at night after 6 p.m.?

YES.....1

NO.....(GO TO Q.30) 0

DON'T KNOW.....(GO TO Q.30) 8

REFUSED.....(GO TO Q.30) 9

28. About how many prostitutes work on your block at night?

NUMBER OF PROSTITUTES .....|___|___|

DON'T KNOW.....98

REFUSED.....99

29. Where do they spend most of their time at night?

PROBE: Where do they hang out?

Mostly outside on the sidewalk and street, 1

Mostly inside apartments and houses,.....2

Both outside and inside, or.....3

Someplace else? (SPECIFY).....4

.....

DON'T KNOW.....8

REFUSED.....9

30. Who do you think these prostitutes are?

PROBE: In general, do you think these **prostitutes** are mostly from your block, your neighborhood, other parts of Jersey City, or ***not*** from Jersey City at all?

Mostly people who live on your block,...1

Mostly people who live in your neighborhood, 2

Mostly people who live in other parts of Jersey City, or 3

Mostly people who are not from Jersey City? 4

OTHER (SPECIFY).....5

.....

DON'T KNOW.....8

REFUSED.....9

31. Who do you think their customers are?

PROBE: In general, do you think their ***customers*** are mostly from your block, your neighborhood, other parts of Jersey City, or ***not*** from Jersey City at all?

Mostly people who live on your block,...1

Mostly people who live in your neighborhood, 2

Mostly people who live in other parts of Jersey City, or 3

Mostly people who are not from Jersey City? 4

OTHER (SPECIFY).....5

.....

DON'T KNOW.....8

REFUSED.....9

32. Now I'm going to ask you about another type of crime that may be occurring on your block.

How often do you think drugs are sold on your block?

A few times a year,.....1

About once a month, ...2

About once a week, ...3

A few times a week, ...4

Every day, or 5

Not at all? .....(GO TO Q.45) 0

DON'T KNOW.....(GO TO Q.45) 8

REFUSED.....(GO TO Q.45) 9

33. Does drug selling on your block take place in the morning between 6 a.m. and noon?

YES 1

NO.....(GO TO Q.36) 0

DON'T KNOW.....(GO TO Q.36) 8

REFUSED.....(GO TO Q.36) 9

34. About how many people sell drugs on your block in the morning?

NUMBER OF PEOPLE.....|___|___|

DON'T KNOW.....98

REFUSED.....99

35. Where does it usually take place in the morning?

PROBE: That is, drug selling.

Mostly outside on the sidewalk and street, 1

Mostly inside apartments and houses,.....2

Both outside and inside, or.....3

Some other place? (SPECIFY).....4

.....

DON'T KNOW.....8

REFUSED.....9

36. Does drug selling on your block take place in the afternoon between noon and 6 p.m.?

YES.....1

NO.....(GO TO Q.39) 0

DON'T KNOW.....(GO TO Q.39) 8

REFUSED.....(GO TO Q.39) 9

37. About how many people sell drugs on your block in the afternoon?

NUMBER OF PEOPLE.....|___|___|

DON'T KNOW.....98

REFUSED.....99

38. Where does it usually take place in the afternoon?

PROBE: That is, drug selling.

Mostly outside on the sidewalk and street, 1

Mostly inside apartments and houses,.....2

Both outside and inside, or.....3

Some other place? (SPECIFY).....4

.....

DON'T KNOW.....8

REFUSED.....9

39. Does drug selling on your block take place at night after 6 p.m.?

YES.....1

NO.....(GO TO Q.42) 0

DON'T KNOW.....(GO TO Q.42) 8

REFUSED.....(GO TO Q.42) 9

40. About how many people sell drugs on your block at night?

NUMBER OF PEOPLE.....|___|___|

DON'T KNOW.....98

REFUSED.....99

41. Where does it usually take place at night?

PROBE: That is, drug selling.

Mostly outside on the sidewalk and street, 1

Mostly inside apartments and houses,.....2

Both outside and inside, or.....3

Some other place? (SPECIFY).....4

.....

DON'T KNOW.....8

REFUSED.....9

42. Who do you think ***sells*** most of the drugs on your block?

PROBE: In general, do you think the ***sellers*** are mostly from your block, your neighborhood, other parts of Jersey City, or ***not*** from Jersey City at all?

Mostly people who live on your block,...1

Mostly people who live in your neighborhood, 2

Mostly people who live in other parts of Jersey City, or 3

Mostly people who are not from Jersey City? 4

OTHER (SPECIFY).....5

.....

DON'T KNOW.....8

REFUSED.....9

43. Who do you think ***buys*** most of the drugs on your block?

PROBE: In general, do you think the ***buyers*** are mostly from your block, your neighborhood, other parts of Jersey City, or ***not*** from Jersey City at all?

Mostly people who live on your block,...1

Mostly people who live in your neighborhood, 2

Mostly people who live in other parts of Jersey City, or 3

Mostly people who are not from Jersey City? 4

OTHER (SPECIFY).....5

.....

DON'T KNOW.....8

REFUSED.....9

44. In the last two weeks, about how many times have you been approached by someone on your block who wanted to sell you drugs?

NUMBER OF TIMES.....|___|___|

DON'T KNOW.....98

REFUSED.....99

45. In the last month, have you witnessed any crimes on your block where you were not the victim?

YES 1

NO.....(GO TO Q.47) 0

DON'T KNOW.....(GO TO Q.47) 8

REFUSED.....(GO TO Q.47) 9

46. About how many crimes have you witnessed on your block in the last month?

NUMBER OF CRIMES.....|___|___|

DON'T KNOW.....98

REFUSED.....99

47. Do you know someone (other than yourself) who was the victim of a crime on your block in the last month?

YES.....1

NO.....(GO TO Q.49) 0

DON'T KNOW.....(GO TO Q.49) 8

REFUSED.....(GO TO Q.49) 9

48. Please describe what happened to them.

_____

_____

_____

49. Next, I would like to ask you a few questions about disorders that might occur on your block. For each of the following, please tell me if it happens on your block often, sometimes, or not at all.

49a. Let's start with youths hanging out being disorderly. Does this happen often, sometimes, or not at all?

OFTEN.....1

SOMETIMES.....2

NOT AT ALL.....3

DON'T KNOW.....8

REFUSED.....9

49b. People drinking alcohol in public. (Does this happen often, sometimes, or not at all?)

OFTEN.....1

SOMETIMES.....2

NOT AT ALL 3

DON'T KNOW.....8

REFUSED.....9

49c. Panhandlers asking for money. (Does this happen often, sometimes, or not at all?)

OFTEN.....1

SOMETIMES.....2

NOT AT ALL 3

DON'T KNOW.....8

REFUSED.....9

49d. People damaging property. (Does this happen often, sometimes, or not at all?)

OFTEN.....1

SOMETIMES.....2

NOT AT ALL 3

DON'T KNOW.....8

REFUSED.....9

49e. Gambling on the sidewalk. (Does this happen often, sometimes, or not at all?)

OFTEN.....1

SOMETIMES.....2

NOT AT ALL 3

DON'T KNOW.....8

REFUSED 9

49f. Cars being broken into or stolen. (Does this happen often, sometimes, or not at all?)

OFTEN 1

SOMETIMES 2

NOT AT ALL 3

DON'T KNOW 8

REFUSED 9

49g. People getting mugged. (Does this happen often, sometimes, or not at all?)

OFTEN 1

SOMETIMES 2

NOT AT ALL 3

DON'T KNOW 8

REFUSED 9

50. In the last three months, do you think that crime on your block has increased, decreased, or stayed about the same?

INCREASED 1

DECREASED 2

STAYED ABOUT THE SAME 3

DON'T KNOW 8

REFUSED 9

51. In the last three months, do you think that crime in Jersey City has increased, decreased, or stayed about the same?

INCREASED 1

DECREASED 2

STAYED ABOUT THE SAME 3

DON'T KNOW.....8

REFUSED.....9

52. Compared to three months ago, do you see more police officers on your block, fewer officers, or about the same number of officers?

MORE.....1

FEWER.....2

ABOUT THE SAME.....3

DON'T KNOW.....8

REFUSED.....9

53. Finally, a few questions about yourself.

How long have you lived in Jersey City?

INTERVIEWER: IF LESS THAN ONE YEAR, ENTER "00" FOR YEARS AND RECORD NUMBER OF MONTHS.

|___|___| YEARS/ |___|___|MONTHS

DON'T KNOW.....98

REFUSED.....99

54. How long have you lived at your current address?

INTERVIEWER: IF LESS THAN ONE YEAR, ENTER "00" FOR YEARS AND RECORD NUMBER OF MONTHS.

|___|___| YEARS/ |___|___|MONTHS

DON'T KNOW.....98

REFUSED.....99

55. In what year were you born?

BIRTH YEAR.....19 |___|___|

DON'T KNOW.....98

REFUSED.....99

56. Are you Hispanic, Latino, or of Spanish origin?

YES 1

NO 0

DON'T KNOW 8

REFUSED 9

57. What is your racial background? Are you . . .

White, ...1

Black or African American, ...2

American Indian or Alaskan Native, ...3

Asian, or 4

Native Hawaiian or Pacific Islander? 5

OTHER (SPECIFY) 6

.....

DON'T KNOW 8

REFUSED 9

58. Are you . . .

Working full-time, ...1

Working part-time, ...2

Unemployed, ...3

Retired, or 4

Something else? (SPECIFY) 5

.....

DON'T KNOW 8

REFUSED 9

59. Do you own or rent your home?

OWN 1

RENT 2

DON'T KNOW 8

REFUSED 9

60. Was your 1997 household income from all sources and before taxes . . .

Less than $10,000, ...1

Between $10,000 and $25,000, ...2

Between $25,000 and $40,000, ...3

Between $40,000 and $60,000, or 4

More than $60,000? 5

DON'T KNOW 8

REFUSED 9

61. Do you have any children under 18 living with you?

YES 1

NO 0

DON'T KNOW 8

REFUSED 9

62. Including yourself, how many people does your household income support?

NUMBER OF PEOPLE .....|___|___|

DON'T KNOW 98

REFUSED 99

63. **INTERVIEWER: ASK ONLY IF UNSURE:** Are you . . .

Male, or 1

Female? 2

END Thank you very much for your time and cooperation. Your participation was greatly appreciated.

Appendix B

JERSEY CITY DISPLACEMENT PROJECT
SOCIAL OBSERVATION INSTRUMENT

1. Street segment:_____

2. Street segment ID number: ____ ____ ____

3. Length of street segment (in miles): ____ ____ ____

4. Displacement site:

1 = Assault/Drug
2 = Prostitution
3 = Burglary

5. Type of area:

1 = Target Area
2 = Catchment Area #1
3 = Catchment Area #2

6. Date of observation: _____ / _____ /

7. Time of observation: ____ : _____ am or pm

8. Period of week:

1 = Week day
2 = Week night
3 = Weekend day
4 = Weekend night

9. Researcher conducting the observation:

01 = Carsten	07 = Choo	13 = John
02 = Ann Marie	08 = Jeron	14 = Aislynn
03 = Vanja	09 = Mike	15 = Natasha

04 = Justin
05 = Chris
06 = Chenard
10 = Gerry
11 = Laura
12 = Jim
16 = James
17 = Gloria
18 = Other

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
	Event Number	Street Segment	Event Begins	Event Ends	Instantaneous Event	# of People	Verbal Disorder	Loud Dispute	Physical Assault	Solicitation	Panhandling	Drug Activity	Drunk/High on Drugs	Public Drinking	Person Down	Homeless Persor	Loud Noise/Music	Gambling	Vandalism	Unattended Dog	Car/Building Break-In	Police Patrol	Police Interactior	# of Police	Other
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								

	Record the following behaviors:	Male Youths	Male Adults	Female Youths	Female Adults
34.	Standing or sitting in a public place for no observable reason				
35.	Talking on a public telephone (i.e., outdoor payphone)				
36.	Recreational activity (i.e., jogging, biking, etc.)				

37. Rate the volume of automobile traffic:

1 = None
2 = Light
3 = Moderate
4 = Heavy

38. Rate the volume of pedestrian traffic:

1 = None
2 = Light
3 = Moderate
4 = Heavy

39. Describe the lighting in this area:

0 = Day time observation
1 = Whole area lit well
2 = Mostly lit well
3 = Mostly lit poorly
4 = Whole area lit poorly

40. Describe the weather conditions:

0 = Night time observation
1 = Clear
2 = Partly clear
3 = Overcast
4 = Light rain

41. Describe the temperature:

1 = Hot (Over 85° F)
2 = Warm (60B85° F)
3 = Cool (32B59° F)
4 = Cold (Under 32° F)

42. Indicate any reactions people had to the observation:

1 = Did not seem to notice observer's presence
2 = Noticed observer's presence but did not seem to care
3 = Stared curiously at the observer
4 = Slowly walked away from the area because of the observer
5 = Scattered as soon as observer entered the area
6 = Hostile reaction (i.e., yelling)
7 = Asked questions

43. Number of prostitutes observed on the street segment: _____

COMMENT SECTION

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Event # _____

_____

Appendix C

JERSEY CITY DISPLACEMENT PROJECT
PHYSICAL OBSERVATION INSTRUMENT

Street segment:_____

Street segment ID number: ____ ____ ____

Length of street segment (in miles): ____ ____ ____

Displacement site:

1 = Assault/Drug
2 = Prostitution
3 = Burglary

Type of area:

1 = Target Area
2 = Catchment Area #1
3 = Catchment Area #2

Date of observation: _____ / _____ /

Time of observation: _____ : _____ am or pm

Period of week:

1 = Week day
2 = Week night
3 = Weekend day
4 = Weekend night

Researcher conducting the observation:

01 = Carsten	07 = Choo	13 = John
02 = Ann Marie	08 = Jeron	14 = Aislynn
03 = Vanja	09 = Mike	15 = Natasha
04 = Justin	10 = Gerry	16 = James
05 = Chris	11 = Laura	17 = Gloria

06 = Chenard 12 = Jim 18 = Other

Record the following physical characteristics:	Tally	Total
10. Burned, boarded up or abandoned buildings		_____
11. Buildings with broken windows		_____
12. Vacant lots not in use		_____
13. Vehicles that appear abandoned		_____
14. Public telephones		_____
15. Signs restricting access/documenting rules of behavior		_____
16. Buildings with security gates or barred windows		_____
17. Benches or picnic tables		_____
18. Bars or liquor stores		_____

19. Rate the volume automobile traffic:

1 = None
2 = Light
3 = Moderate
4 = Heavy

20. Are automobiles parked along the street?

1 = On one side of the street
2 = On both sides of the street
3 = On neither side

21. Describe the street pattern:

1 = One lane
2 = Two lanes
3 = Four lanes
4 = Cul-de-sac

22. Is there a bus stop or bus station on this street segment?

1 = Yes
0 = No

23. Is there a subway station on this street segment?

1 = Yes
0 = No

24. Is the street one-way or two-way?

1 = One-way street
2 = Two-way street

25. How would you rate the lighting in this area?

1 = Very good
2 = Good
3 = Fair
4 = Poor

26. Describe the property in this area:

0 = No residential or commercial property
1 = Entirely residential
2 = Residential, some commercial
3 = Mixed residential and commercial
4 = Commercial, some residential
5 = Entirely commercial

27. Describe the commercial buildings in this area:

0 = No commercial buildings
1 = Mostly industrial (factories, warehouses, etc.)
2 = Mostly retail (stores and office buildings)

28. Describe the residential buildings in this area:

0 = No residential buildings
1 = Mostly single-family homes
2 = Mostly multi-family homes (triple-deckers, townhouses, etc.)

3 = Mostly apartment buildings
4 = Mostly high-rise apartments (seven or more floors)
5 = Evenly mixed housing

29. Rate the overall perception of the neighborhood:

1 = Ghetto poverty area
2 = Lower to working class area
3 = Middle class area
4 = Mixed, mostly wealthy
5 = Mixed, mostly poor

30. Indicate the approximate percentage of residential buildings on this street segment:

1 = 0%
2 = 1 – 25%
3 = 26 – 50%
4 = 51 – 75%
5 = 76 – 100%

31. Indicate the approximate percentage of commercial buildings on this street segment:

1 = 0%
2 = 1 – 25%
3 = 26 – 50%
4 = 51 – 75%
5 = 76 – 100%

32. Indicate the approximate percentage of burned, abandoned or boarded up buildings on this street segment:

1 = 0%
2 = 1 – 25%
3 = 26 – 50%
4 = 51 – 75%
5 = 76 – 100%

33. Indicate the approximate percentage of public service buildings on this street segment:

1 = 0%
2 = 1 – 25%
3 = 26 – 50%
4 = 51 – 75%
5 = 76 – 100%

34. Condition of grass and shrubbery:

1 = No grass or shrubbery
2 = Not maintained
3 = Partly maintained
4 = Well maintained

35. Condoms and condom wrappers on the sidewalk:

1 = None
2 = Light
3 = Moderate
4 = Heavy

36. Needles and drug paraphernalia on the sidewalk:

1 = None
2 = Light
3 = Moderate
4 = Heavy

37. Buildings with structural damage:

1 = Less than 10%
2 = 10 – 30%
3 = 30 – 50%
4 = More than 50%

38. Buildings marked with graffiti:

1 = Less than 10%
2 = 10 – 30%
3 = 30 – 50%
4 = More than 50%

39. Streets and sidewalks covered with broken glass:

1 = Clean
2 = Mostly clean
3 = Moderately scattered
4 = Heavily scattered

40. Yards and streets with litter:

1 = Clean
2 = Mostly clean
3 = Moderately littered
4 = Heavily littered

Appendix D: Missing Value Analysis

A missing value analysis (MVA) was run to test for patterns in the missing data that could bias the findings of this study. The table below presents a summary of the N for each variable and the number and percentage of missing values for each. Means and standard deviations are only provided for the continuous variables and not for the dummy variables. A glance shows that the number of persons supported by the household's income (support) has the most missing values.

Univariate Statistics

	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
socialdis_change	742	-3.4826	4.67270	42	5.4	42	3
change_phys	784	.0867	1.47871	0	.0	2	8
perceive_disorder	660	8.5742	2.72106	124	15.8	0	0
crimechange	784	-3.1947	9.54610	0	.0	27	15
t1fear_avg	685	2.5369	.46553	99	12.6	13	12
phs_disorder11	784	2.5791	1.56881	0	.0	0	0
Crime1	784	23.2200	20.99470	0	.0	0	36
age	661	42.7337	17.40538	123	15.7	0	0
yearhere	712	10.55	12.237	72	9.2	0	48
support	603	2.65	1.533	181	23.1	0	3
direct_victim	731			53	6.8		
ind_victim	724			60	7.7		
target	784			0	.0		
black	706			78	9.9		
hispanic	706			78	9.9		
oth_race	706			78	9.9		
female	731			53	6.8		
children	716			68	8.7		
own_home	652			132	16.8		

a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

The next section of the MVA analysis shows the mean for each variable when other variables are missing and when they are present. The table is not presented here as it is too large fit within the margins. A glance at the results showed that the means

differed little in regards to missing values, and for the continuous variables (with one exception) the difference is always less than the standard deviation for that variable. The exception is age, where the difference is greater than the standard deviation for age (17.41) for female, having children and years at residence. In those cases the mean for age was about 20 higher when any of those three variables were missing. Overall, this suggests that the missing values will have very little impact on the results.

The percent mismatch table below shows the percent of each variable that is missing on the diagonal. The off diagonal lists the percentage missing of the column variable when the row variable is missing. Again we see that the number of persons supported by the household's income (support) has the most missing. Additionally when "support" is missing, some other variables tend to be missing at a similar rate. However, removing "support" from the ordinal regression analysis did not affect the results, thus it was decided to retain it.

Percent Mismatch of Indicator Variables.[a,b]

	socialdis_change	direct_victim	female	ind_victim	children	yearhere	black	hispanic	oth_race	age	perceive_disorder	t1fear_avg	own_home	support
socialdis_change	5.36													
direct_victim	11.35	6.76												
female	11.35	.51	6.76											
ind_victim	12.24	1.40	1.40	7.65										
children	12.50	2.42	2.42	3.32	8.67									
yearhere	13.27	2.93	2.68	3.83	2.81	9.18								
black	13.78	3.70	3.70	4.59	3.06	3.83	9.95							
hispanic	13.78	3.70	3.70	4.59	3.06	3.83	.00	9.95						
oth_race	13.78	3.70	3.70	4.59	3.06	3.83	.00	.00	9.95					
age	18.75	9.44	9.44	10.33	7.53	7.27	8.04	8.04	8.04	15.69				
perceive_disorder	18.62	9.57	9.57	9.95	9.44	9.95	10.71	10.71	10.71	13.14	15.82			
t1fear_avg	16.45	8.16	7.91	8.80	10.08	10.33	10.84	10.84	10.84	16.07	15.94	12.63		
own_home	20.41	10.59	10.33	11.22	8.93	10.46	10.46	10.46	10.46	14.92	16.33	12.12	16.84	
support	26.40	16.58	16.58	17.47	14.41	15.43	14.92	14.92	14.92	16.33	19.77	17.86	7.27	23.09

The diagonal elements are the percentages missing, and the off-diagonal elements are the mismatch percentages of indicator variables.

a. Variables are sorted on missing patterns.

b. Indicator variables with less than 1% missing values are not displayed.

Lastly, the final table below shows the patterns of missing values found to be present in the data. We see that 461 cases are present on all variables, and that most of the found patterns are not of major concern as they involve closely related questions (i.e. owning a home and number of persons supported) in which a non-response in one would lead one to expect a non-response on the other. One pattern showed that 42 cases were missing on 13 variables, all of which came from the resident interview surveys. This is not of major concern as 42 cases is not a large percentage of the total, and as all the variables were from the resident interviews it is clear this is just due to these respondents refusing to answer a majority questions on the survey.

Tabulated Patterns

Number of Cases	Missing Patterns[a]																			Complete if ...[b]
	change_phys	crimechange	phs_disorder11	Crime1	target	socialdis_change	direct_victim	female	ind_victim	children	yearhere	black	hispanic	oth_race	age	perceive_disorder	t1fear_avg	own_home	support	
461																				461
25																			X	486
29																		X	X	519
24						X														485
35																X				496
20																	X			481
21															X					482
19																	X	X	X	559
42							X	X	X	X	X	X	X	X	X	X	X	X	X	742

Patterns with less than 1% cases (8 or fewer) are not displayed.

a. Variables are sorted on missing patterns.

b. Number of complete cases if variables missing in that pattern (marked with X) are not used.

Thus it was concluded from this MVA that there did not appear to be any concerning patterns to the missing values, or differences in means due to missing values, that would be likely to bias the findings. As such it was decided to simply exclude all cases with missing values, and run the analysis on the 461 cases which had full data for the independent variables rather than imputing values for a relatively large number of cases.

Works Cited

Ayidiya, S. and McClendon, M. (1990). Response effects in mail surveys. Public Opinion Quarterly 54: 229-247.

Bishop, G.F. (1987). Experiments with the middle response alternative in survey questions. Public Opinion Quarterly 51: 22 0-231.

Cohen, L. E. and Felson, M. (1979). Social Change and Crime Rate Trends: A Routine Activity Approach. American Sociological Review 44: 588-608.

Covington, J. and Taylor, R.B. (1991). Fear of Crime in Urban Residential Neighborhoods: Implication of Between- and Within-Neighborhood Sources for Current Models. The Sociological Quarterly 32: 231-249.

Eck, J.E. and Weisburd, D. (eds.) (1995). Crime and Place: Crime Prevention Studies 4. Monsey, NY: Willow Tree Press.

Farrall, S. (2004). Revisiting Crime Surveys: Emotional Responses Without Emotions? International Journal of Social Research Methodology 7: 157-171.

Farrall, S. and Gadd, D. (Unpublished Manuscript). Fear Today, Gone Tomorrow: Do Surveys Overstate Fear Levels?

Farrall, S. and Gadd, D. (2004). Research Note: The Frequency of Fear of Crime. British Journal of Criminology 44: 127-132.

Ferraro, K.F. (1995). Fear of Crime: Interpreting Victimization Risk. State University of New York Press, Albany.

Garofalo, J. (1979). Victimization and the Fear of Crime. Journal of Research in Crime and Delinquency 16: 80-97.

Garofalo, J. and Laub, J. (1978). The Fear of Crime: Broadening Our Perspective. Victimology 3: 242-253.

Herbert, S. (2001). Policing the Contemporary City: Fixing Broken Windows or Shoring up Neo-liberalism? Theoretical Criminology 5: 445-466.

Hunter, A. (1978). Symbols of Incivility. Qtd in R. Taylor. The Incivilities Thesis: Theory, Measurement, and Policy. In R.H. Langworthy (Ed.), Measuring What Works: Proceedings from the Police Research Institute Meetings (pp. 65-88). U.S. Department of Justice, National Institute of Justice and Office of Community-Oriented Policing Services, July 1999. NCJ: 170610.

Kelling, G. and Coles, C. (1996). Fixing Broken Windows: Restoring Order and Reducing Crime in American Cities. New York: Free Press.

Kelling, G. and Sousa, W. H. (2001). Do Police Matter? An analysis of the impact of New York City's Police Reforms Civic Report 22. New York: Manhattan Institute for Policy Research.

Lewis, D.A. and Salem, G. (1986). Fear of Crime. New Brunswick, N.J. Transaction Books.

Long, J. S. (1997). Regression Models for Categorical and Limited Dependent Variables. Advanced Quantitative Techniques in the Social Sciences Series 7. Thousand Oaks: Sage Publications.

Markowitz, F.E., Bellair, P.E., Liska, A.E., and Liu, J. (2001). Extending Social Disorganization Theory: Modeling the Relationships Between Cohesion, Disorder and Fear. Criminology 39: 293-320.

Osgood, D. W. and Rowe, D. C. (1994). Bridging Criminal Careers, Theory, and Policy Through Latent Variable Models of Individual Offending. Criminology 32: 517-554.

Rennison, C.M. and Rand, M. (2002). Criminal Victimization 2002. Bureau of Justice Statistics. National Crime Victimization Survey. http://www.rainn.org/ncvs_2002.pdf

Robinson, J. B., Lawton, B.A., Taylor, R.B., and Perkins, D.D. (2003). Multilevel Longitudinal Impacts of Incivilities: Fear of Crime, Expected Safety, and Block Satisfaction. Journal of Quantitative Criminology Vol. 19, No. 3: 237-274.

Sampson, R. J. and Raudenbush, S.W. (1999). Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods. American Journal of Sociology 105: 603-651.

Sherman, L. (1995). Hot Spots of Crime and Criminal Careers of Places. In John Eck and David Weisburd (eds.), Crime and Place: Crime Prevention Studies 4. Monsey, NY: Willow Tree Press.

Sherman, L. and Weisburd D. (1995). General deterrent effects of police patrol in crime "hot-spots": a randomized control trial. Justice Quarterly 12: 626-648.

Skogan, W. (1990). Disorder and Decline: Crime and the Spiral of Decay in American Neighborhoods. The Free Press.

Taylor, R. (1997). Social order and disorder of street blocks and neighborhoods: ecology, microecology, and the systemic model of social disorganization. Journal of Research in Crime and Delinquency 34: 113-155

Taylor, R. (1999a). The Incivilities Thesis: Theory, Measurement, and Policy. In R.H. Langworthy (Ed.), Measuring What Works: Proceedings from the Police Research Institute Meetings (pp. 65-88). U.S. Department of Justice, National Institute of Justice and Office of Community-Oriented Policing Services, July 1999. NCJ: 170610.

Taylor, R. (1999b) Crime, Grime, Fear, and Decline: A Longitudinal Look. National Institute of Justice: Research in Brief: July 1999.

Taylor, R. (2001) Breaking Away From Broken Windows: Baltimore Neighborhoods and the Nationwide Fight Against Crime, Grime, Fear, and Decline. Crime and Society Series. Westview.

Taylor, R. and Hale, M.M. (1986). Testing Alternative Models of Fear of Crime. Journal of Criminal Law and Criminology 26: 151-189.

Weisburd, D. (2002). From criminals to criminal contexts: reorienting criminal justice research and policy. Advances in Criminological Theory 10: 197-216.

Weisburd, D., Bushway, S., Lum, C. and Yang, S. (2004). Trajectories of crime at places: a longitudinal study of street segments in the city of Seattle. Criminology 42: 283-321.

Weisburd, D., Wyckoff, L., Ready, J., Eck, J., Hinkle, J. and Gajewski, F. (2005). Does Crime Just Move Around the Corner? A Study of Displacement and Diffusion in Jersey City, NJ. Report submitted to National Institute of Justice. Grant No. 97-IJ-CX-0055

Wilson, J. Q. (1975). Thinking About Crime. New York. Basic Books.

Wilson, J. Q. and Kelling, G. (1982). Broken Windows. Atlantic Monthly 211: 29-38.